A PELICAN BOOK

KENNETH WALKER

Meaning and Purpose

An analysis of the main scientific theories of the last hundred years and their impact upon religious thought and belief

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ABOUT THIS BOOK

Science now exercises the most important formative influence on the intellectual life of the Western world and has to a great extent taken the place formerly occupied by religion. The author examines the scientific theories of the last hundred years which have most strongly affected popular thought, and he shows how frequently these theories have been misinterpreted by lay minds. But although science has supplanted religion, an innate need for some form of faith remains, and in order to satisfy it men have availed themselves of certain religion-substitutes, such as Communism and the worship of humanity and of the race. These pseudo-religions are passed in review and their deficiencies as philosophies of life are exposed. The author then discusses the new developments in physics and their prospects for the future. At present popular thought remains incarcerated in various systems of ideas which are not only unsatisfactory substitutes for religion but have now to a great extent been abandoned even as scientific theories. His final conclusion is that it is impossible for men to live by science alone and that it is essential to their welfare that they should be possessed of some form of idealist philosophy or religious faith.

Other Pelicans by the same author are: *Human Physiology* (A102) and *The Physiology of Sex* (A71).

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To those members of the younger generation who,
at present engaged in war, will soon turn
from the work of world-destruction
to the infinitely more difficult
work of world-construction

PREFACE

If the function of a preface is to state the purpose of the book which is to follow it, the writing of this preface should present no difficulty. We live in a scientific age, and this being so our thoughts are strongly coloured by scientific views. I have considered it worth while therefore to examine critically those scientific theories of the last hundred years which have exerted a strong influence on our thinking, not so much for the purpose of assessing their worth as for that of discovering the effect which they have had on our philosophy of life. A book, and even a book which concerns itself chiefly with ideas of a scientific and philosophical nature, is to some extent autobiographical, and while discussing the various scientific theories which have shaped our thoughts and have been partly responsible for the undermining and destruction of religious beliefs, I have been continually reminded of my own youth. Looking back, I have seen clearly that at different periods of my life my mind became incarcerated within the narrow confines of some doctrine such as the scientific materialism of the last century, the idea advanced by Darwin that evolution occurred through the action of blind mechanical forces, or the equally pessimistic systems of psychology sponsored by Pavlov and Freud. And what is particularly apparent to me now that I have escaped from these mental prisons is that while confined in them I was completely satisfied with my surroundings. I firmly believed that the universe was a meaningless interplay of matter and forces, that life arose on this planet as an accident, and that from some primitive ancestor had been evolved all the creatures which now peopled the earth solely by means of the selective action of the struggle for existence on chance variations of type. I was equally ready to accept the view that thought was only a reflex action and that religion was 'humanity's great obsessional neurosis.' While under the spell of these ideas I looked upon all forms of human experience other

than those which had been utilized by the sciences as being unproductive of knowledge. For me the artist's preoccupation with beauty, the philosopher's search for fundamental principles and the religious man's quest of the divine represented nothing but man's innate desire to escape from a forbidding reality into a realm of fantasies and dreams. It is only now that I realize how often in the past I mistook tentative theories for absolute truths, and temporary resting-places for thought for permanent residences. It was not the inventors of these theories who were to blame for what had happened to me, but my own inability to understand the true function of science and the nature of the conclusions at which it arrives.

It may, of course, be objected that the obstacles which hindered the youthful development of a man who has now reached the age of sixty no longer hinder the youth of to-day, and that to re-examine the outmoded systems of thought of the nineteenth and early years of the twentieth centuries is a waste of time. I do not believe this to be the case. Although the recent revolutionary changes in physics will eventually affect the thinking of ordinary men and women, they will not do so for many years to come. If therefore by exposing the unsatisfactory and temporary nature of the various mental residences in which I over-prolonged my stay I can assist others to escape from them a little earlier in their lives than I did, I shall consider the labour which the writing of this book has entailed to have been well repaid. Any hesitation I may have at first felt in expressing my dissatisfaction with science as the sole guide to living was dispelled by the discovery that there are many of the younger generation who are still of the opinion that science is capable of providing all that they need, and even a metaphysic. It was the superstition of the nineteenth century that science was absolute and would in time produce its own metaphysic. It is high time that we got rid of this vain hope.

When a writer has borrowed as freely as I have done from the works of others, it is difficult or impossible for him to state and to make acknowledgment for his indebtedness. This

being the case, I can mention only a few of the books which I have found to be of particular value in the preparation of this work. These are *Creative Evolution* and *Morality and Religion* by Henri Bergson, *The Nature of the Physical World* by Sir A. S. Eddington, *Science and the Modern World*, *Adventures of Ideas* and *Nature and Life* by A. N. Whitehead, *Design and Purpose* and *Habit and Heritage* by Frederick Wood Jones, and W. Macneile Dixon's *The Human Situation*.

London, 1943

CHAPTER I

The Decline of Belief

> The most singular and deepest themes in the History of the Universe and Mankind, to which all the rest are subordinate, are those in which there is a conflict between Belief and Unbelief, and all epochs wherein Belief prevails, under what form it will, are splendid, heart-elevating and fruitful. All epochs, on the contrary, when Unbelief, in what form soever, maintains its sorry victory, should they even for a moment glitter with a sham splendour, vanish from the eyes of posterity, because no-one chooses to burden himself with a study of the unfruitful. – GOETHE

GOETHE was a poet, philosopher and scientist. Early in his life he came across the writings of Spinoza and was so satisfied with his idealist philosophy that he felt no need for any more orthodox form of religion. When therefore Goethe deplored the prevalence of unbelief, he was in all probability not referring so much to disbelief in any particular church doctrine or even to disbelief in those broader generalizations which are common to all religions, as to disbelief in the spiritual nature of the universe; he was contrasting the barrenness of materialism with the fruitfulness of idealism. Even at that time there were signs that man's attention was being deflected from the depths of events to their surface, from the intangible to the tangible, and from the dimly apprehended to the obvious, a change in interest which later became so marked that it no longer required Goethe's genius to discern it. From Goethe's day onwards there has been a continuous weakening of belief in what Plato termed universal values and a corresponding strengthening of confidence in the reality of matter. So accustomed have we become to look upon the material world around us as the real world that the words concrete and real are now commonly used as synonymous terms. We regard the paper on

which we write down our thoughts as having a reality which must be denied to the thoughts and emotions for which they serve as a vehicle. Matter, rigged out in those attributes of colour, texture and form which it borrows from our senses, has taken the centre of the stage, and thought and consciousness, the other actors in life's caste, are given only subsidiary parts to play. So absorbed are we with the performance of matter that we seldom pause to wonder what would become of it if we were to withdraw from it all the qualities which it has borrowed from us, its colour, its form, its hardness or softness, and yet if this were actually to happen, matter would of necessity disintegrate into nothingness.

But in spite of our confidence in matter and notwithstanding the hesitation we feel in crediting our minds with an independent existence doubts and wonders from time to time assail us. There are moments when we also are troubled by those questions which men have been asking themselves since first they began to think, questions which may be unanswerable but are none the less urgent by reason of this. In quiet moments under the stars at night, on a hilltop, amid the expectant silence of a wood, we become conscious of a *mysterium tremendum et fascinans*, and of an urge to discover some clue to the meaning of the universe and of our presence in it. The startling thought that we are alive and are conscious of being alive disturbs our complacency and demands some answer. We become convinced that there is a secret to be discovered somewhere if we search diligently enough and we are no longer able to accept the miracle of our existence without attempting to find some explanation of it. If there be no meaning in the universe, or in our presence in it, as many scientists would have us believe, why are we so disturbed and why have men throughout the ages been searching for a meaning? Why in spite of all discouragement have they refused to be satisfied with appearances only and why have they been so convinced that somewhere, just beyond their grasp, lay the key to an understanding of the mystery? If, as the physiologists tell us, man is merely a physical body

jerked through life by a network of nerves, if there is no meaning in his individual life, or in the universe in which he finds himself, is it not strange that he should have been born with this persistent illusion of a secret to be discovered and of an explanation to be found? Was the maker of man a devil, as A. E. Housman in his despairing moments believed him to be, or was he merely a humorist when he implanted in his handiwork a consciousness of his existence and a sure knowledge of his death? Does this contriver of man laugh at the antics of his puppets and make mock of their search for a meaning where there is no meaning to be found? The idea of the Creator tiring of the incessant praise of the angels and turning to the creation of beings who, the more they are afflicted, the more they bless Him, is common in literature. Hardy uses a similar theme in *Tess of the D'Urbervilles*. 'Justice was done and the President of the Immortals ... had ended his sport with Tess.' In these words the great novelist, in the last paragraph of his work, utters his defiant protest against the irony of implanting in man a desire for goodness and truth which he is unable to satisfy. For of this there can be no doubt, that in man there exists a hunger for truth which only the attainment of it can assuage. Eddington has stated that if science were to progress so far as eventually to succeed in synthesizing in its laboratories not only a living organism, but a living man, he would want to apply a crucial test before he would agree that science had really wrought this miracle. He would insist on asking if this new creation had a hunger for truth and only if the answer were in the affirmative would he accept him as being a real man.

Man has a desire to discover meaning, and what is of great significance is the fact that he has been endowed with an instrument which renders him sometimes capable of finding it. It is difficult to read accounts of the lives of the world's great religious geniuses without coming to the conclusion that they were in possession of a special faculty which permitted them to seize truths which lay beyond the reach of the intellect. They had spiritual vision where lesser men remained blind.

Now it is an undeniable fact that nowhere in nature is there to be found such an anomaly as an organ which has no possibility of functioning, an eye on which light is doomed never to fall, an ear-drum in a soundless world, a tactile organ which will never respond to an appropriate stimulus. It is unbelievable therefore that men have been given a faculty for the apprehending of spiritual truths merely that they may the better delude themselves. There are times when belief becomes more logical than unbelief and when the conviction that we are spiritual beings living in a spiritual universe can no longer be summarily dismissed as an irrational dream. At such times the idea that worshipping beings exist in a meaningless and mechanical universe seems the absurdity it is. It is our fate to live in one of Goethe's epochs of unbelief, in an age which no longer holds, as former ages held, that man has his being on two interpenetrating planes of spirit and matter and in an age which prefers Swift's picture of man that he is 'a forked animal with bandy legs' to Carlyle's idea of him that he is 'yet also a spirit, and unutterable mystery of mysteries.' We have ceased to believe that the real meaning of our lives can be found only by relating them to some great design or purpose which lies outside ourselves, and we are now invited to believe that since everything is meaningless, we must create our own purposes and our own values. We have rebelled against the old idea of the existence of a transcendental plan in which the presence of conscious beings on the earth finds its place, and having destroyed this ancient belief we are now finding that all works of destruction are followed by an aftermath.[1] It must be remembered that those who are engaged in any act of rebellion are fortified by the exhilaration which comes from the conviction that they are getting rid of obstacles to progress and are preparing the way for some new venture. It is only later that any feeling of emptiness is experienced, and of this feeling we are now becoming painfully aware. Dogmas have been swept on one side, religions

1. 'I have tried everything; oh, tearing down is easy, but building up!' (Nietzsche)

have been pushed into the background, beliefs have been uprooted, and the site has been prepared for a brave new enterprise. But for what? Has the ground been cleared for one of H. G. Wells's hygienic Utopias, or for some new form of civilization based on the judicious mixture of science, Marxism and humanism, advocated by many of our intellectuals? We have lost our old beliefs, but we have not been able to shed with them also our credulity, and as Walter Lippmann has said:

> The modern man who has ceased to believe, without ceasing to be credulous, hangs, as it were, between heaven and earth, and is at rest nowhere.

The reaction which inevitably follows the disappearance of traditional beliefs was even more noticeable during the earlier year of this century than it is now. No generation could have been more thoroughly disillusioned than that which came to maturity in the years immediately following the First World war. Those who belonged to it 'saw through' everything and discovered that there was nothing worth believing and nothing worth doing. For them the universe and their own lives were equally devoid of meaning, and this being so they had no alternative to that of adopting the nihilistic philosophy of meaninglessness. Bodily pleasure and sensations could alone be considered real, and to the cultivation of these the victims of post-war disillusionment devoted themselves without let or hindrance. But even when amusing themselves they had uncomfortable doubts as to whether they were really being amused, or whether it was possible to be amused in an imbecile world. But it is impossible to live indefinitely on the idea that life is a 'tale told by an idiot, full of sound and fury, signifying nothing,' and a new and healthier generation began to grow up. This and the generation which followed it are at present engaged in the grim business of war, but it is upon them that much of the responsibility for reconstructing the world will fall when the task of destruction has come to an

end. If this work is to be satisfactorily carried out it is essential that some measure of agreement on fundamental principles should be reached. At present there is little agreement on the important question of values and the prospective builders of a new world are separated into even more camps than were their predecessors. On no question are they more divided than on the question of religion. There are those who remain completely satisfied with their emancipation from what they regard as being the cramping beliefs of religion and see no need for any form of faith. For them religion is an obstacle to progress, and in support of this thesis they point out that instead of having united men religious beliefs have always divided them and have been one of the most fruitful causes of the persecutions, conflicts and bitter wars which have converted human history into a story of human suffering. They believe that humanity will gain from the disappearance of one of the commonest causes of internecine strife. Others, although less hostile to the old orthodox creeds, are of the opinion that even if religions have served some purpose in the past the world is no longer in need of them. In future men will be able to live by the light of reason alone, or, since we are emotional as well as intellectual beings, by reason working in conjunction with the arts. With the help of science, literature, music and art, and with humanism in place of religion, men will eventually achieve all that is possible for them to achieve. There is yet a third group of prospective world-builders who are conscious that their emancipation from religion has left a vacant place in their lives which neither science nor art has been able to fill. Discontented with freedom from all beliefs, they seek a philosophy of living, a *religio vitae*, without being able to find one. It was this group which I had chiefly in mind whilst engaged on this book, for to my way of thinking it is difficult to travel through life without any chart or compass. The fact that this work has been written by an author who owes allegiance to no particular church and who provides no infallible solution to the problem of unbelief may be regarded by some people as being its chief weakness, but to those who

are suspicious of all orthodoxies and of all effort to entice them back into a fold which they have deserted it will seem its chief strength.

In the following chapters some of the ideas, and particularly the scientific ideas, which have shaped the thought of the last hundred years and have been in no small degree responsible for the destruction of the older beliefs will be examined. It will be seen that although many of these systems of thought have now been discarded by scientists, they still continue to exert an effect on the layman's view of the nature of the universe and of life on this planet. This retention of obsolete theories is due to the fact that knowledge diffuses slowly, so slowly that even in science there are workers in one department of science who continue to make use of concepts which have long been abandoned by those who are working in another department of it. For example, biologists retain the nineteenth-century view of matter and struggle to explain life by means of concepts which were always ill-suited to the needs of biology and are now no longer sufficient for the needs of physicists. The time lag in the dissemination of knowledge is still marked in the case of its spread from scientific to non-scientific circles. Thus it comes about that there are many people who are still under the impression that everything can be explained in terms of particles in motion, although no modern physicist would ever agree with this. The mistake made by these laymen would be of little consequence were it not for the fact that since materialism is incompatible with all forms of religious belief they wrongly assume that science has proved all such beliefs to be false. So much misunderstanding, indeed, exists on the subject of the relationship of science to religion that a general overhauling of the theories which have affected the lay thought of the last hundred years and have to some extent been responsible for the disappearance of religious belief seems to me to be long overdue. We travel through life with so much mental luggage that it is advisable occasionally to pause and take stock of it in order that we may get rid of those ideas which impede our progress. When we

do this we usually find that we have been encumbering ourselves with a great deal of obsolete and utterly useless baggage. In the following chapters samples of the philosophical equipment of twentieth-century intellectuals will be submitted to inspection and their value as aids to successful living assessed.

CHAPTER II

Matter and Science

In the previous chapter complaint was made that we of the nineteenth and twentieth centuries have accorded primary importance to matter and have devoted ourselves exclusively to the study of what we consider to be 'irreducible and stubborn facts.' It is not altogether surprising that, living as we do in a knockabout world, we should have developed this hearty respect for matter. Matter surrounds us on all sides, matter seems durable and matter is for ever forcing itself on our attention. If in the blackout we trip over a kerb, or walk into a lamp-post, both these structures appear to us to be unmistakably real, far more real indeed than the thoughts which were occupying our minds before the accident occurred. From fantasy we have suddenly and painfully been brought back to hard and uncompromising fact, and if an idealist philosopher were at that moment to present himself and to assure us politely that the reality behind all phenomena, including the lamp-post, was of the nature of mind we should be considerably out of temper with him. Thoughts possess no permanency, and even although it may be ourselves who have invested the lamp-post with its form and its hardness, the permanency which it possesses would seem to justify its claim to be real. But if the philosopher whose idealism had irritated us were then to adopt another line of argument, if he were to point out to us that our knowledge of the lamp-post was inferential and therefore remote knowledge, whereas our knowledge of the thoughts we were entertaining before we walked into it was direct and intimate knowledge, we would be without means of refuting him. For he would be right in saying that the only part of the universe of which we have any genuine and direct cognizance is that small part of it which is

in our heads. This being so, our thoughts and feelings are for us invested with a reality which no outside objects possess. There is yet another difference to be noted between the worlds within us and without us. Whereas the physical aspects of the world in which we move about are in continual need of being explained and of being interpreted as other than they appear to be, the thoughts and feelings which we apprehend directly can be accepted at their own face value. Thought is indeed the first, the most direct and the most fundamental thing in our experience, and it is therefore invested with a reality which no lamp-post possesses. Boswell reports that when Dr. Johnson tired of the sophistry which he believed that Bishop Berkeley had employed in proving the non-existence of matter and the ideal nature of the universe, he struck his foot against a great stone, crying, 'I refute it thus.' This action undoubtedly brought some comfort to the disgruntled doctor, but it proved no more than did our walking into the lamp-post. It was an act which was as incapable of refuting idealism as it is of disproving the modern scientific description of a stone, namely, that it consists almost entirely of emptiness. Dr. Johnson confirmed only what he already knew, that if he kicked a stone he would immediately become aware of certain sensations which followed the passage of impulses along his tactile nerves. He was employing the experimental method of investigation favoured by scientists and not the dialectical method favoured by philosophers.

A great deal of confusion of thought has arisen from the failure to understand the technique which science uses in studying the physical world around us. We are inclined to forget that it works within a very narrow framework and that it employs a method of investigation which will allow it to reach conclusions only of a very limited nature. We do not expect a black-and-white artist, working with ink and white paper, to produce a picture which records the varied shades and colours of the landscape, nor should we expect a scientist working with the equally limited material of matter and motion to give a complete account of the world he is studying.

He can answer some of the questions which we put to him and can often answer them with great precision, but he can make no pronouncements on those aspects of his subject which he has never intended to study and has no means of studying. To understand the true function of science and to be able to evaluate its theories it will first be necessary to have a very clear idea of the method by which it works.

Every living creature on the earth, from an amœba to a man, inhabits a private world of its own, a world which it has scooped out of the totality of the universe with the help of its sense organs. Since these organs differ widely in various animals, it is obvious that there must be as many kinds of private worlds as there are varieties of animals. For the mole working underground the universe seems to be made up of smells and sounds which are interspersed with vague feelings resulting from changes in humidity and temperature and with a number of tactile sensations occuring in different parts of its body. From this medley of sensations and with little help from its eyes the mole constructs a very simple private universe. The world of the dog is a very different one from that inhabited by the mole, for it is enlarged by a wide range of impressions which reach him through his eyes. The world carved out of the totality of the universe by a man is incomparably richer and more complex than that known to any animal, for it is extended in every direction by the working of his mind. But this private world of man, immense though it be, is still a strictly limited one, for our sense organs receive only a few of the vibrations which permeate space. Beyond the red and the violet of the spectrum lies a whole range of undulations to which the senses remain insensible. But with the help of the ingenious instruments which he has contrived for himself, modern man has become aware of all sorts of vibrations of the existence of which he would otherwise have been ignorant. By their instruments the scientists have enlarged the world in which they live until it has become immensely richer and more varied than that inhabited by primitive man. So great and complex has the world of the scientists become that when

they start to investigate it they find it difficult to know where to begin. The only method of overcoming this *embarras des richesses* is to reduce and to simplify the unwieldy world which their instruments have created for them. Scientists, therefore, impose on themselves a rigid discipline, selecting out of the totality of their impressions those which best serve the purposes of their research. To be more precise, they abstract from the totality of qualities which the object of their study possesses those only which are primary, that is to say, those only which can be numbered, weighed or measured. Whilst this method of simplification has been of immense value to the scientists, it has been a source of confusion to those who are unacquainted with scientific technique. Not realizing that the scientists work in a deliberately restricted world constructed out of certain useful abstractions, the non-scientific onlookers often imagine that they are dealing with a complete world. This has resulted in endless confusion of thought. For example, when scientists have announced that they are not concerned with the significance or with the purpose of things, but only with certain relationships which exist between them, the onlookers have often mistakenly assumed the absence of all purpose or meaning. 'If the scientists,' they say, 'cannot find a meaning in this world, or in life, or in anything, with all their cleverness and with all their wonderful instruments, then clearly there is no meaning to be found.'

Scientists make use of experiments and of observations followed by induction. Since Bacon emphasized the value of this method of research, they have pictured themselves as moving about in the external world, putting questions to nature in the form of experiments. If the questions were carefully framed, that is to say, if their experiments were skilfully contrived, nature could be relied upon to give them an answer. But unfortunately the metaphor I have used is a false one, for scientists are so firmly imprisoned in their bodies that it is impossible for them to move about in the external world or even to establish any direct contact with it. Instead of viewing their environment directly, they are like men who are locked

in a room and are attempting to decipher messages which reach them from an outside world of which they have no first-hand knowledge. Certain messages reach them from without through the five windows of the senses, and, since they rely most on sight, more particularly through the window of the eyes. Plato long ago described our situation in his well-known allegory of the captives in the cave, thereby reminding us that our knowledge of things outside us is never a direct knowledge but only an inferred knowledge. All, therefore, that scientists are really doing is noting the relationship between certain shadows and not, for all the seeming solidity of these shadows, the relationship between things-in-themselves.

It may be said that all understanding of the universe comes from the combined action of two faculties in us, the power to register impressions and the capacity to reason and reflect on them. Understanding would be increased if we could succeed in increasing the efficiency of either of these components of knowledge. It is highly suggestive that the only method of increasing understanding which is ever made use of in the West is that of heightening our capacity to register impressions. This is done by using instruments such as the telescope and the microscope which extend our vision a thousandfold and bring to the eye undulations of light which without their aid would never reach the retina. No attempt is ever made in the West to improve the working of that part of our psychic equipment which reasons and reflects, for it is generally believed that this cannot be altered. It is recognized of course that different men vary in their ability to make associations, to draw distinctions and to reason, but no effort is ever made to increase the capacity of the individual man to reason and reflect. Western systems of psychology and philosophy show but little interest in the particular quality of mind which distinguishes a man from animals, the quality of consciousness. Because of this failure to study this special attribute of man, it is assumed that the reflecting and reasoning capacity of the human mind is unalterable. All therefore that we are believed to be capable of doing, if we want to learn more of the world

in which we live, is to multiply the messages we receive from it in the belief that if we can see more we shall also be able to understand more. But unfortunately the mere enlargement of the windows through which messages reach us from without does not necessarily lead to an increase of understanding and as often as not it results only in an increase of confusion.

Unlike the Western scientist and philosopher, the Eastern sage is far more interested in the component of the instrument of knowledge which reasons and reflects than in that which registers impressions and perceives. An excellent summary of his own attitude to knowledge is given by Plotinus in a letter which he wrote to his friend Flaccus. In this letter he makes use of a word which has been translated into English as 'intuition', but as will be seen later, this term is a very unsatisfactory one owing to the laxity with which it is used.

> Knowledge, wrote Plotinus, has three degrees – opinion, science, illumination. The means or instrument of the first is sense; of the second, dialect; of the third, intuition. To the last I subordinate reason. It is absolute knowledge founded on the identity of the mind with the object known.

In subordinating reason to intuition it is obvious that Plotinus was not referring to the erratic emotional faculty to which this word is often applied.

The question whether there is a method of apprehending truth other than through the special senses and the reason, in other words, whether there is a knowledge of a higher order than that known to ordinary men, is one of the most vital questions which it is possible to consider. Our whole attitude to life will be affected by the answer we return to this question. This great issue must be faced by each of us and answered with a clear affirmation or negation. We must either accept or reject the suprarational origin of the great religions; we must either affirm or deny the possibility of arriving at truth by means other than through the special senses and the intellect.

To state therefore that this crucial question is more often answered in the affirmative in the East and in the negative in the West is to assert that Eastern thought is predominantly religious in character and that Western thought is predominantly scientific. Few people will deny that this is the case, for it is by no mere accident that all the great world religions have originated in the East, and thence have travelled westward, losing much of their original character while doing so.

Western thought is dominated by science, and science has isolated itself from all ideas of a religious nature and until recently was completely out of touch with philosophy. Western scientists appear to have a constitutional antipathy to metaphysical speculations. Distrusting dialectics, they prefer to rely solely on the special senses, which they are often inclined to look upon as being delicate tentacles which bring them into *direct* contact with reality rather than as being windows through which messages reach them from an unapproachable world. And in one way the older scientists were right to avoid troubling themselves with epistemological problems, for the working tools of their craft were observation and inference and not dialectic or contemplation. If they were to achieve any results they could not become too deeply involved in metaphysical speculations. Having worked out their plan of research they had to proceed with their work and to leave the interpretation of their results to the philosophers. But to suppose that science could continue indefinitely to dispense with philosophy was as ridiculous as to suppose that philosophy could pay no heed to science, for whenever scientists carry their researches far enough they inevitably meet with philosophical problems. This has become particularly obvious in physics, the most advanced of all the sciences, and modern physicists, compelled to become philosophers in spite of their distaste for metaphysics, freely admit that they never establish contact with reality, but only with the shadows which reality casts upon their minds. This enforced excursion of the physicists into the domain of the philosophers is of good omen.

CHAPTER III

The Scientists' Account of the Universe

In *Science and the Modern World* Whitehead follows the course of scientific thought through the last few centuries. In the Middle Ages, before the rise of experimental science, men believed that the nature of things could best be studied by the method of metaphysical analysis, and in this period Church doctrines and the scholastic philosophy which the Church sponsored formed the foundations of European thought. The sixteenth century witnessed a revolt against all forms of traditional knowledge which was brought about by the rapid growth of science and mathematics. It had been found that there was an ordered pattern in nature, a pattern with which scientists could become better and better acquainted by the use of experiment and the inductive method of reasoning. This method of studying nature proved so successful that interest shifted for the next three hundred years from metaphysical speculations to scientific research.

From the very first physics established an ascendancy over all other departments of science, an ascendancy which it has maintained up till the present day. This branch of science made particularly rapid advances during the seventeenth century, the century of genius, as it is called by Whitehead, since it saw the work of men of the mental stature of Descartes, Pascal, Newton, Huyghens, Boyle, Locke, Spinoza and Leibnitz. No star in this galaxy of talent shone more brightly than that of Newton, who gave scientists a new view of the universe and enabled them to explain many of its physical events. He started from the assumption that the external world is made up of matter and motion, and in his *Principia* expounded the laws which determined motion. With a knowledge of these laws the movements of the heavenly bodies could be calcu-

lated and many physical events which had previously puzzled scientists could be adequately explained. It is not to be wondered at that Newton's contemporaries eagerly accepted his premises and that his successors remained so satisfied with his assumptions as to the fundamental character of the universe that they retained them for more than two centuries after his death. Newton's mechanistic conception of the universe justified itself by the most searching test of all, the fact that it worked. Scientists were therefore completely satisfied with his ideas and henceforward ceased to interest themselves in all those metaphysical speculations concerning the nature of the universe which had previously influenced their outlook.

The successes of the inductive method of reasoning were so striking that the sciences which made use of it were grouped together during the seventeenth century under the general heading of the 'New Philosophy', and the Royal Society was founded in order to stimulate this method of research. But even although the now fashionable New Philosophy was dominated by science it was not felt that its teaching was in any way incompatible with the doctrines of the Church. It is true that religious discussions were not permitted at the meetings of the Royal Society, but these were forbidden for the same reason that political arguments were barred. As yet no cleavage had appeared between science and religion and many of the most enthusiastic workers in the new laboratories were devout churchmen. Ray, the great pioneer of botany and zoology, always made it clear to his colleagues that divinity was his real profession, and Newton and Boyle devoted as much of their time to the study of the Bible as to their researches in physics. Such men as these, far from thinking that there was any contradiction between science and religion, believed that the ordered and apparently intelligent world which they studied provided strong confirmatory evidence of the existence of an All-Wise and Omnipresent God. The reverence with which they worshipped the Deity was maintained in their scientific study of the wondrous universe which He had created. At one period of his life Newton enter-

tained the thought of retiring altogether from science in order that he might devote the whole of his time to the study of the Old Testament prophets, the Gospel of St. John and the chronology of the Bible. On the strength of his theological knowledge he was actually offered the mastership of Trinity College, Cambridge, a position which had hitherto been held only by divines. But when we trace the history of theology and science throughout the following century we find that they slowly diverged from each other and in course of time became isolated departments of knowledge expressing contradictory views of the universe. As Hardwick[1] has pointed out, the human mind has a faculty of creating prisons for itself, and eventually the scientific spirit incarcerated itself in a materialistic scheme of the universe which completely cut it off not only from religion but from all fruitful speculation concerning man's nature. In like manner the self-sufficient pedantry of the church scholars had the effect of enclosing religion in a rigid casing of thought, which completely isolated it from all the new discoveries being made by the scientists. Insulated from each other's ideas and pitifully satisfied with the sufficiency of their respective beliefs, it was inevitable that in the end scientists and teachers of religion should come into conflict.

The appearance of the new school of positivist philosophers at the end of the eighteenth century marked an important stage in this estrangement of science and religion. The positivist philosophers, like Kant, were of the opinion that human knowledge is limited to the study of phenomena and that the nature of things-in-themselves can never be known. Having adopted this view they felt that it would be far better for men to accept the limitations which had been placed on human thought and to confine their efforts in future to the advancement of science and to the improvement of social conditions. They believed also that the true function of philosophy was to co-ordinate and to systematize scientific knowledge, instead of attempting the impossible task of dis-

1. J. C. Hardwick, *Religion and Science* (1920)

covering the unknowable. And as philosophy would gain by giving up its vain search for an unattainable metaphysic, so also did they believe that religion would profit by abandoning its transcendental aim. Instead of struggling to find an incomprehensible God, religious men should in future be content to devote themselves to the service of humanity. These, in brief, were the recommendations made by the positivist philosophers, who in spite of the many disagreements they had had with the Church, were willing to let bygones be bygones and to work with it for the betterment of mankind. Comte, whom some of the positivists regarded as their leader, clearly stated the terms on which his colleagues were willing to cooperate with the representatives of religion.

> Full justice will be done to the aims of catholicism, and to the excellence of its results. But the whole effect of positivist worship will be to make men feel clearly how far superior in every respect is the synthesis founded on the Love of Humanity to that founded on the Love of God. Christianity satisfied no part of our nature fully, except the affections. It rejected Imagination, it shrank from Reason; and therefore its power was always contested, and could not last.[1]

In demanding that the Church should henceforth take a subsidiary place and should hand over the leadership of mankind to the scientists Comte was making extravagant demands. From the earliest times European civilization and thought had been built on the basis of Christian culture. A complete system of philosophy and theology had been elaborated by the best ecclesiastical scholars of the first five centuries, and by the equally learned scholastics of the thirteenth century, and this system was generally believed to provide mankind with all the mental guidance that it needed. This ecclesiastical system of thought was based primarily on the books of the Old and New Testaments, and it accepted therefore the cos-

1. Auguste Comte, *A General View of Positivism.* Translated by J. H. Bridges.

mology laid down in Genesis. To this Biblical nucleus of knowledge had later been added a Christianized rendering of Aristotle and excerpts taken from Augustinian theology. The scholastic system of philosophy satisfied all the needs of the Church, and it proved acceptable to scholars generally until the end of the seventeenth century. In proclaiming therefore that the Church had failed and that it should retire, Comte was at the same time demanding that it should deny the whole system of knowledge which had hitherto guided European thought.

But what the positivists demanded was actually destined to take place. Within a comparatively few years a change in the relative positions of science and religion became noticeable. Prior to the nineteenth century scientific discoveries had been of interest only to a few intellectuals and had exerted little or no influence on the thought of ordinary people. For them the Church, in spite of its weakened authority, still remained the final court of appeal to which all controversial matters could be referred for a decision. But at the beginning of the nineteenth century a new and penetrating voice began to make itself heard in Europe, the voice of science. Scientific theories and concepts were now discussed by people who had hitherto given them but little attention. And it would have been difficult for people to have remained indifferent to science at a time when it was making its influence felt in so many different spheres of human endeavour, and more particularly in that sphere of activity which was now considered to be of more importance than any other, industry and commerce. While the Church had long ago ceased to work miracles the researchers and technicians of science were performing wonders every day in the week. What was of special importance to those living in an industrial age was the fact that the miracles which they wrought were of an extremely profitable nature. Electric power and lighting, telegraphy, telephony, innumerable new machines and novel chemical processes were rapidly changing the conditions of life and increasing general prosperity. So amazing were the achievements of science that it

was confidently expected that when it had supplied all of man's material needs, it would be able to answer many of the fundamental questions to which religion had given such unconvincing replies. In a few years science would be able to explain, or even to make, life, to eliminate all disease, to postpone old age and to establish a new and glorious era. Hilaire Belloc might have been thinking of the Victorian age when he wrote :

> When science has discovered something more
> We will all be happier than we were before.

The nineteenth century was an age of great expansion, of ever-widening horizons and of unbounded confidence in the steady progress of humanity. It was believed that under the guidance of science men were advancing swiftly towards a not far distant millennium. The nineteenth century was also, in Lippmann's phrase, 'an age of terrific indictments and of feeble solutions.' There existed a determination to sweep on one side all archaic forms of thought and all obstacles to progress. Old ideas and systems of knowledge, whatever their nature, were subjected to a searching criticism, and, if found wanting, discarded. In Germany Baur and Strauss became the pioneers of the higher criticism and their irreverent treatment of the Scriptures caused much alarm in British orthodox religious circles. Science in the person of Charles Darwin was at the same time denying the truth of the Biblical account of the Creation and asserting that man was only a sophisticated kind of ape. As the result of these converging attacks by the higher critics and the scientists on the authenticity of the Bible the influence exerted by the churches was still further weakened. The rapid decline of religion had important consequences. Hitherto men had possessed a faith which with all its shortcomings had taught them how to adjust their lives to the Divine Order which reigned in the universe. It was true that orthodox Christians quarrelled amongst themselves concerning details and claimed far more knowledge of the Divine Purpose than it was possible for them to possess, but they

were agreed on certain fundamental principles. Salvation w
believed to lie in obedience to and in communion with t
Divine Being who ruled the universe, and in accordance w
whose will all events, including those of their own lives, u
folded themselves. In all cases of doubt or whenever th
needed help men turned for guidance to that book whi
according to John Donne, had been taken down word
word by 'the Secretaries of the Holy Ghost.' But now, in t
nineteenth century, all this was being rapidly changed by t
startling discoveries which were being made. The high
critics had shown that instead of proving entirely reliable t
Bible was full of inaccuracies, and Darwin was believed
have proved that men had not been specially created in t
Divine image, but had been slowly and painfully evolv
from ape-like ancestors. All the old beliefs were being su
jected to a searching scrutiny and because many of them we
no longer tenable they were being hastily, and often u
necessarily, flung on one side.

Action is followed by reaction and all events in the univers
both physical and mental, are subject to the rhythm of eb
and flow. Sir William Dampier, in his study of the history
science, shows that mechanical and spiritual theories of t
universe alternate with each other. With each new advan
in science and with the subjection of another set of phen
mena to the rule of mechanical law,

> the human mind, by an inevitable exaggeration of th
> power of the new method, tends to think that it is on th
> point of reaching a complete mechanical explanation
> the universe.[1]

Many examples of this alternation of materialism and idealis
in the history of knowledge could be given. The old Gree
atomists who made a clever guess at the structure of matte
a guess which to some extent anticipated the atomic theory
the nineteenth century, were confident that they could accou

1. Sir William Dampier, *The History of Science*

for everything in nature in terms of particles in motion, and for a long time their views proved acceptable. It was only later that the insufficiency of the atomic theory to account for many things became apparent, and when this happened atomism was abandoned in favour of the idealism of Plato and Aristotle. Subsequently thought swung back again in the direction of materialism, and, as will be seen, this has remained the popular creed until the beginning of this century.

The explanation of physical events in terms of matter and motion seemed so satisfactory to seventeenth- and eighteenth-century scientists that the majority of them believed that it could be extended to all other phenomena and that life, consciousness and thought would eventually be interpreted satisfactorily along physico-chemical lines. Descartes himself was of the opinion that living organisms were only elaborate pieces of machinery. He held that the contraction of muscles was brought about by the 'animal spirits' being blown into them so that they bulged and shortened. These 'animal spirits' were filtered off from the blood and were collected in a reservoir in the brain, whence they were periodically discharged down the 'nerve tubules' into the muscles. But with advances in biological knowledge it became more and more difficult to explain life on purely mechanical lines, and soon after Descartes' death the mechanistic view fell into disrepute and was replaced by the theory of vitalism. The vitalists held that though all inorganic phenomena could be explained mechanically, life entailed processes which could not possibly be explained along physico-chemical lines. What distinguished living organisms from inanimate matter was their capacity to conserve, heal and reproduce themselves, and these processes were such that they could not be explained by chemical and physical laws. They were manifestations of the intervention of some living force, or principle, which because it acted automatically and without choice was of a different nature to the soul. The vital principle was believed to vary in different organisms, but in all cases it departed from the body at the moment of death. This description of life was at one time

very popular. John Hunter, the great English anatomist and contemporary of Kant, was a vitalist, and so also were the distinguished German biochemists, Leibig and Wöhler. Even after Wöhler had discovered a method of synthesizing urea and by so doing had exploded the idea that substances formed by the living body could not be manufactured artificially, he remained a vitalist. But from the middle of the nineteenth century belief in the existence of a vital force has been disappearing from biology, although it may be said to have reappeared in an entirely new form in the philosophy of Bergson. Vitalism served as a useful protest against the still more unsatisfactory view of mechanism, but it threw no light on the puzzling phenomena of life. The idea that life is only a very complicated physico-chemical process is so grossly defective that it is difficult to understand how it could have survived so long. Few modern scientists accept it as a possible explanation of life, although the theory has recently been resuscitated by the discovery of the ultra-microscopic viruses. These minute particles of protoplasm lie so near to the boundary between animate and inanimate matter that authorities are still uncertain whether they are alive or not. Some viruses can be crystallized and yet retain their power to cause disease, and it is difficult to believe that life, in the ordinary sense of that word, can survive in such a form.

A mechanical view of life necessarily entails a belief in strict physiological and psychological determinism. If thoughts and emotions are the result of physico-chemical activities occurring in the brain and the body, these processes in common with all other events in the universe must be regarded as being bound to a causal chain. The nineteenth-century scientists accepted physiological and psychological determination without hesitation and expressed their belief in them frequently in their writings. Laplace in his *Essay on Probability* asserted that the state of the world at any given moment was the result of its antecedent states and that it in turn became the cause of the state which followed it. To illustrate this he said that an infinitely capable and industrious mathematician,

knowing the precise condition of the universe at a given moment, would be able to calculate the whole of its subsequent history. 'Nothing would be uncertain for him; the future as well as the past would be present to his eyes.' Tyndall made a similar statement at the meeting of the British Association in 1874, prophesying that one day science would be able to explain everything in terms of the movements of atoms, everything from the evolution of worlds to the proceedings of the British Association.

Determinism and materialism are generally associated with marked degrees of subjectivism, that is to say, with the view that almost all of the qualities which we ascribe to the universe really belong to us and are projected by our minds on to the external world. Locke divided the attributes of the external world into two categories, primary and secondary, the primary attributes being those which the universe possessed in its own rights. These were configuration, magnitude and motion. All the secondary qualities which external objects *seem* to possess, that is to say all attributes other than configuration, magnitude and motion, are projected on to them by us.

According to the subjectivists we are indefatigable artists who spend our time transferring our own sensations, our own thoughts and feelings on to the blank canvas of the universe, the warp of which is space and the woof of which is time. When we catch glimpses of loveliness in nature, when we are thrilled by primroses clustering round a tree, by seagulls circling over a Cornish cliff or by hills outlined against a pale evening sky, we have invested all these objects with a beauty which does not rightly belong to them. To the subjectivist, nature is but a dull affair of particles in motion, of swiftly-travelling electrons, of matter devoid of intelligence, colour or meaning. In Whitehead's well-known words:

> ... nature gets credit which should in truth be reserved for ourselves: the rose for its scent; the nightingale for its song; and the sun for its radiance. The poets are entirely mistaken. They should address their lyrics to them-

selves, and should turn them into odes of self-con gratulation on the excellence of the human mind.

How fantastic is the universe which materialistic scienc depicts for us. It is a vast laboratory packed from floor t ceiling with eleborate machinery, moving, turning, producin and consuming, creating and destroying, and doing all thi endlessly and to no purpose. According to the materialist we live in a world which consists only of agitated matter an we ourselves are constructed of the same quivering an dancing atoms of which our surroundings are made. We ar cogs in the immense machinery of the world, reagents in thi vast chemical factory of nature. Endowed with intelligenc where all else is unintelligent, conscious where all else is un conscious, we look around us for signs of an answering in telligence and consciousness and we can find none. We searc for meaning and there is no meaning; we discover beauty an find that it is an illusion; we recognize goodness only t realize that it exists in our imagination alone. Only in us i there consciousness and unconsciousness, sanity and madness beauty and ugliness, goodness and evil. When Robinso Crusoe found himself marooned on a desert island, he wrot a journal and talked to his parrot for the sole purpose of re taining his sanity. We apparently are faced with a loneliness that is infinitely greater than that of Robinson Crusoe and ar seeking comfort by projecting our poor thoughts and fantasie on to the surrounding emptiness, colouring it with imaginary beauty and investing it with fictitious meaning.

Now it is not surprising that those who work in a labora tory should describe the universe in terms of machinery and chemical retorts, for in all descriptions men employ the analogies with which they are most familiar. What is sur prising is the readiness with which the scientists' account of the universe has been accepted as a complete account of it by those who are not scientists. Whilst it is generally recognized that artists are concerned with only one aspect of nature, its

beauty, and religious men with another aspect of it, that it is the living garment of God, for some reason it is popularly believed that scientists are reporting on all aspects of nature, and are giving a more objective account of it than are the artist and the man of religion. When therefore they liken the universe to a machine it is quite generally believed that it is actually a machine and that it is nothing but a machine. It is this which is so surprising. With prophetic insight, Samuel Butler once warned the world against the tyranny of machines, but he did not foresee that there was a danger of their dominating our minds as well as our bodies. Scientists have dwelt so long on the idea of the machine that this concept has taken possession of many of them and they are unable to think of nature in any other terms. Now whilst the concept of the machine has proved of great service to science, it is of little help in explaining life and thought, and it is obvious that biology and psychology are badly in need of additional concepts. To believe that a machine-universe could create an infinitude of things which are entirely foreign and useless to it, such as our sense of beauty and goodness and our search for meaning and purpose, is so ridiculous that it is difficult to understand how it has come to pass.

It should be borne in mind that the scientists of the last century did not assert that the universe was actually a machine, although in non-scientific circles this was believed to be the case. What the scientists said was that from their standpoint the universe behaved in the same way as a machine behaves. Lord Kelvin stated the scientific case with great honesty when he said: 'If I can make a mechanical model I can understand it. As long as I cannot make a mechanical model all the way through I cannot understand it.' It will be helpful to examine what Lord Kelvin implied by this statement and what he meant by understanding. In using this word he clearly meant his ability to connect up some new scientific observations with ideas which were already in his mind. When we understand something it is as though an isolated piece of jigsaw puzzle which formerly possessed no meaning for us suddenly slips

into its right place amongst pieces which we have alread fitted together. When this happens we experience the sam exhilaration and gratification which we feel in completing picture puzzle. For Kelvin therefore understanding meant a interpretation of physical events in those terms with whic he was most familiar, namely terms of machinery. As W Lippmann has put it:

> The man who says that the world is a machine has reall advanced no further than to say that he is so well satisfie with the analogy that he is through with searching an further.[1]

No harm would have resulted from the scientists' infatua tion with the concept of mechanism if everybody had realize that it was being used as a serviceable analogy and not as a exact description of what they were studying, but those wh follow the doctrines of science are not always able to mak nice discriminations. It was the seeming simplicity of th mechanistic interpretation of the universe which made mater ialism so popular that in the nineteenth century it was widel accepted not only as a scientific theory but as a complete phil osophy. A great number of people of that time believed tha everything in the universe from the movements of atoms t the highest forms of human thought would eventually be fully explained mechanically. At first sight it might seem that th implications of materialism are so forboding that it would b rejected by non-scientific minds, but this was very far from being the case. There are many people who display a strong partiality for the grim and the austere and who enjoy some secret gratification from their ability to accept beliefs which those of a weaker nature are forced to reject. Materialism has always been a popular creed. Bentley wrote of the materialism of his time, 'the taverns and coffee-houses, nay, Westminster Hall and the very churches, are full of it,' and if Bentley had returned to earth at the end of the last century he would have

1. W. Lippmann, *Preface to Morals*

found that popular opinion had changed very little since his day. In spite of the obvious defects of materialism as a philosophy, in spite of its complete inability to account for the phenomenon of life and of its failure to explain the existence of thought and of consciousness, materialism is still accepted by many unthinking people as a credible explanation of the universe and of all that the universe contains.

Our knowledge of the world in which we live is derived from our experience of it, and, as Eddington has said, experience may be regarded as being a combination of self and environment. It is impossible, therefore, to consider the universe without at the same time considering the mind which observes it, and this is now fully realized by the physicists, for whom epistemology, or the study of the nature of knowledge, has become of paramount importance. Because of this they are very different from the physicists of the nineteenth century who gave little attention to this subject and believed that they were studying an objective nature which existed in its own right and which had so existed from all eternity whether it was perceived or not. It was out of this incomplete understanding of the nature of their discoveries that materialism grew. But we now know that the electric and magnetic forces with which modern physicists deal and the energy, momentum and masses with which Newtonian physics dealt are not objective realities but only mental constructs which scientists use to enable them to understand better the activities of nature. It does not necessarily follow from this that materialism and determinism are obsolete terms which must now be discarded, but it definitely means that they must be interpreted correctly.

Since we cannot separate the universe from the mind which studies it, it is obvious that the particular psychic faculty employed in science will give us a less complete understanding of the universe than that which will be obtained not by one but by all our psychic faculties working in harmony. The mechanistic interpretation of the world provided by the intellect entails such a large measure of abstraction and of arbi-

trary delimitation that it can only be regarded as giving a one-sided view of it. To be exact, as science is exact, at the expense of leaving out all that is of real importance to us as human beings, is to distort the world so much that it is no longer recognizable to us as the world in which we live. Science has provided us with a report of the universe which enables us to amplify and to correct our other views of it, but, as Eddington has put it:

> We do not pluck out our eyes because they persist in deluding us with fanciful colourings instead of giving us the plain truth about wave-lengths. It is in the midst of such misrepresentations of environment (if you must call them so) that we have to live.[1]

To look upon the colouring and the beauty of our surroundings as a misrepresentation of nature would be therefore to mistake an entirely one-sided view of nature for a complete account of it. Science has laid bare much of the fundamental structure of the universe, but it is the genius of the observing mind that has transmuted this structure into the rich and satisfying world of our experience. This transmutation should not be regarded as being a misrepresentation but should be hailed as a mighty achievement, for without the mind's act of creation we would be unable to live.

Formerly the universe of common sense (the world of everyday life) was more obviously related to the universe of the scientist than at the present day, for in constructing their universe the older scientists made use of materials with which everybody was familiar. But modern physicists borrow as little as possible from the world of everyday life and construct a universe out of such mysterious constituents as electrons, quanta and that spectral and high-sounding entity, 'the Hamilton function.' It is not surprising that we are not able even to recognize such a foreign land, let alone live in it.

In the introduction to his Gifford Lectures, Eddington

1. Sir A. S. Eddington, *The Nature of the Physical World*

gives an excellent illustration of the difference between the common-sense and the scientific account of the external world. He draws a distinction between the two tables at which he has settled down to write his lectures. The first is the table of everyday experience, a table which possesses extension and substance and which does not collapse when he leans on it. It also enjoys a considerable degree of permanency. The second table is his scientific table, which does not belong to the world which appears when he opens his eyes, but is part of a world 'which in more devious ways has forced itself' on his attention. This scientific table is composed mostly of emptiness. Through this emptiness sparsely scattered electric charges rush about at high speed, their combined bulk amounting to less than a billionth part of the bulk of the table of everyday life. In spite of its emptiness the scientific table supports his writing paper, for the tiny electric particles hitting its underside contrive to maintain it in position. There is nothing which may be looked upon as being substantial about this second table, for science no longer makes use of the notion of substance and prefers to deal with 'influences' rather than with 'things.'

When we look at the method that has been employed by science we see that it is the outcome of the scientists' passionate desire to be exact. Scientists have evolved their particular technique in the vain hope that they will be able to obtain by means of it a purified residuum of knowledge which is not subjective and human, but objective and absolute. They have been making desperate attempts to scramble out of their skins and to discard everything human in the belief that by getting rid of such encumbrances they will be able to describe the world not as a man sees it, but as some mythical abstract being might see it. Having stripped off from the objects of their study all those qualities which were possessed by one, but not by another, such as the qualities of colour, design, life and intelligence, they have eventually reached two attributes, namely, those of mass and motion, which seemed to be common to them all. These two residual qualities were then

credited with an independent existence, and an attempt wa made to explain everything by means of them. At each stag of their progress upwards from inert matter to man, th scientists have attempted to explain the higher in terms o the lower, chemistry in terms of the movement of atoms, lif in terms of chemistry, thought in terms of life, and con sciousness in terms of thought. Having begun outside them selves with phenomena which they looked upon as being objective, the phenomena of mass and motion, the scientist were under the impression that they had eventually reache man and had to some extent explained him. But actually the had never left man, for, as Edward Carpenter has pointed out 'Mass and motion, which in this process are taken to be rea entities and the first progenitors of all phenomena, are simply the last abstractions of sensible experience, and are empties concepts.'[1]

So long as science remains utilitarian in its aims this metho of working gives excellent results. For all practical purpose any theory may be used which happens to be convenient, jus as in order to record the features of a country any graphi form of map may be used. But in both cases it is essential t bear in mind that these methods of summarizing phenomen are a means to an end and not an end in themselves. Unfortu nately this is too frequently forgotten.

1. Edward Carpenter, *Civilisation: Its Cause and Cure*

CHAPTER IV

Darwin Precipitates a Crisis

THE return of a young naturalist on October 2nd, 1836, from a five-years' voyage in H.M.S. *Beagle* did not appear at the time to be a very notable event except perhaps to the relatives awaiting his arrival, but actually it was to have important consequences for the thought of the next hundred years. During his five years abroad Charles Darwin had visited the coasts of South America, Australia, New Zealand, Tasmania, as well as many of the lesser-known islands of the southern seas. He returned with his note-books industriously filled with the innumerable observations he had made there, upon which he settled down to work soon after he had landed. Darwin had been particularly impressed by the interdependence of living creatures, by the ingenuity which they displayed in adjusting themselves to changes of environment and by 'the manner in which closely allied animals replaced one another in proceeding southwards.' Many years previously Lamarck had been equally struck by the effect of environment upon the structure of animals and plants, and had evolved a theory of the origin of species which had not been favourably received. Charles Darwin was well acquainted with Lamarck's work, as well as with that of his own grandfather, Erasmus Darwin, but he did not regard their theories as being sufficient to account for the differences which exist between one species and another. In arranging and editing his notes he paid particular attention to all those observations which might have some bearing on the subject of the transmutation of species. While engaged in this work Darwin happened to come across a book which had been written by a clergyman, the Reverend Thomas Malthus, an able amateur economist, who had interested himself in the relationship of the size of

the population to its available food supply. In his *Essay on Population* Malthus made the observation that human populations invariably tend to outrun their means of subsistence, and he came to the conclusion that their size was automatically restricted by the restraining influence of famine, war and pestilence. Malthus lived in a prolific age, and it was obvious to him that the population around him was increasing so fast that it would become more and more difficult to feed it. He was of the opinion that if the same rate of increase were to continue indefinitely the struggle for food would eventually become so fierce that the weaker members of society would inevitably perish and that only the stronger would manage to survive.

It is remarkable how often some accident in the form of a chance remark or a passage in a book provides a scientist with an explanation for which he has long been seeking. Accident has indeed played as large a part in supplying some missing link in a chain of scientific reasoning as it has played in bringing the work of an explorer or an inventor to a successful conclusion. Darwin made no secret of the fortunate event which had given him the explanation he needed, and he has himself recorded the effect which Malthus's book had on him.

> I happened to read for amusement Malthus on Population, and being well prepared to appreciate the struggle for existence which everywhere goes on from long continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of new species. Here, then, I had a theory by which to work.

By an even stranger coincidence another biologist, A. R. Wallace, had also come across Malthus's hitherto but little appreciated *Essay on Population*, and, like Darwin, had come to the conclusion that the struggle to survive supplied the key to the understanding of the origin of species. Darwin and

Wallace therefore both began to work in the same direction without being aware that they were following an identical line of thought. Darwin only realized this when in the summer of 1858 he received from Wallace a paper entitled *On the Tendency of Varieties to Depart Indefinitely from the Original Type*. This paper, posted from Malaya, was accompanied by a letter requesting Darwin to send it to Lyell after he had read it. This Darwin did, explaining at the same time that he himself had reached the same conclusions as Wallace and that he proposed to publish a book on the subject at a later date. It was agreed by Darwin and Lyell that both Wallace's paper and an abstract of Darwin's unfinished manuscript should be printed together in the Journal of the Proceedings of the Linnean Society. The two treatises eventually appeared on September 5th, 1857, but strange to say, they attracted very little attention. Darwin records in his autobiography that the only serious notice taken of them was a criticism from the pen of Professor Haughton of Dublin, who complained 'that all that was new in them was false, and that what was true was old.'

Darwin does not appear to have been much bothered by this somewhat tepid reception of his new theory, and on the advice of Lyell and Hooker he hurried on the completion of his book on the evolution of species. This was published in November, 1859, the full title of it being *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. The first small edition of Darwin's book was sold out on the day of publication and the second edition a short time afterwards. Numerous reprints followed, and Darwin's work was soon translated into every European language and even into Japanese. Few books have had such an effect on their readers as had this work of Darwin's, and the influence of *The Origin of Species* on the thought of the time can only be compared with that exerted by Rousseau's *Contrat Social*, Marx's *Das Kapital*, Mrs Beecher Stowe's *Uncle Tom's Cabin* and Thomas Paine's *Rights of Man*.

The Origin of Species was followed by *The Descent of Man*. Those who had accepted Darwin's first thesis that species

originated from the selective action of the struggle for existence on chance variations accepted with equal alacrity his view that since man was an animal he had been evolved by the same process as that which had produced the rest of the animal world. It was not only the scientists who were deeply stirred by the publication of Darwin's two works, but also innumerable people who had hitherto paid but little attention to current scientific theories. Both Darwin and Wallace had been anxious lest their views should be denounced as irreligious, and the latter had taken the trouble to point out in his work on Darwinism that

> the Darwinian theory, even when carried out to its extreme logial conclusion, not only does not oppose, but lends support to, a belief in the spiritual nature of man.

But the non-scientific readers of Darwin's books thought otherwise, and it must be admitted that Wallace's reflections on the subject of the spiritual implications of Darwinism are not very convincing. It is not altogether surprising therefore that, despite the efforts of the two biologists to appear to be good orthodox Christians, the clergy were deeply disturbed by the new scientific theories which were gaining so many adherents amongst those who had already shown a disposition to discount Church doctrines. Darwin had indeed precipitated a crisis comparable to that produced by Copernicus a little more than three hundred years previously when he had announced that the earth was not the fixed centre of the universe but a planet revolving round the sun. In the intervening time the power of the Church had declined and it was no longer possible for it to suppress inconvenient scientific theories summarily on the ground that they were heretical doctrines. What made Darwin's thesis particularly unpalatable to those with an orthodox religious outlook was the fact that he looked upon man's creation as being unpremeditated and the result of a purely mechanical process. According to this view, the evolution of man formed no part of a great design, but was

in the nature of an accident, and it was this particular feature of Darwinism that commended it very highly to the mechanically-minded scientists of that time. T. H. Huxley expressed the feeling of his contemporaries when he wrote that scientists of that day looked upon the publication of *The Origin of Species* as being a flash of lightning which had suddenly illuminated their darkness.

> We wanted, he wrote in his life of Darwin, to get hold of clear and definite conceptions, which could be brought face to face with facts and have their validity tested. The Origin provided us with the working hypothesis we sought. Moreover, it did us the immense service of freeing us for ever from the dilemma – Refuse to accept the Creation hypothesis, and what have you to propose that can be accepted by any cautious reasoner?

It is not surprising, therefore, that scientists for whom 'clear conceptions' were synonymous with mechanical conceptions eagerly welcomed the new automatic theory of evolution. Darwin was in every sense of the word the man of the hour.

The Darwinian controversy spread from the scientific journals into the pages of the more serious quarterlies, and even into the dignified columns of *The Times*. It may be said to have reached its zenith at the famous Oxford meeting held a year after the publication of Darwin's book. This meeting, which, because of its importance in the history of the estrangement between science and religion must be described in some detail, had many of the characteristics of one of those set battles which often follow a preliminary period of manœuvring for position. The Church party was undoubtedly well placed for battle had it been wise enough to fight with its own weapons, to defend only those tenets which were essential to Christianity, and to avoid being enticed into arguments in which it was certain it would be worsted. But, as had happened so often in the past, the Church did not elect to do so. It decided instead to carry the attack into the scientists' camp

and to maintain that the first chapter of Genesis gave a literal and not a symbolic account of creation. The accuracy of Darwin's observations was to be challenged and the inferences which he had drawn from them were to be proved false. Rarely has one side in a battle selected more unwisely the ground on which it would fight and rarely has it paid so dearly for its strategical error.

Samuel Wilberforce, Bishop of Oxford, and third son of the great emancipator of the slaves, was selected to lead the church party. It was felt that he was not too badly equipped for leadership because he had obtained a First in mathematics and could therefore claim some acquaintanceship with science and scientists. As Raven has remarked, the Bishop possessed a certain natural ability in the form of a nimble tongue.

> The man who could explain away his nickname of 'Soapy Sam' by saying 'You see I am always in hot water and always come out of it with clean hands,' was no fool, and had a great gift for debate.[1]

Finally, Wilberforce had the advantage of speaking in his native town, where, in spite of his nickname, he possessed a good reputation.

The following description of the meeting is taken from Huxley's *Life and Letters* by his son. Long before the doors opened it became widely known throughout Oxford that the Bishop intended to 'smash Darwin.' There is evidence that he had been specially primed for the meeting by Professor Owen, who had adversely criticized Darwinism in the *Edinburgh Review*, and was known to harbour a certain personal grudge against the originator of the new theory. It was generally believed that Huxley, popularly known as 'Darwin's faithful watchdog,' would be the leader of the opposing side. Actually, Huxley had no intention of speaking at the meeting, for he was of the opinion that the debate would almost cer-

1. C. E. Raven, *Science, Religion and the Future*

tainly degenerate into an appeal to popular prejudice, and that in the presence of such a mixed audience no satisfactory discussion could take place. He had even decided to absent himself from the meeting, but at the last moment he was persuaded to put in an appearance. So many people crowded into the lecture-room of the Oxford Museum that the appointed meeting-place had to be abandoned in favour of the larger West Room of the Library. Although it was not term time, and although the public was not admitted, even this more spacious room was crowded to suffocation long before the protagonists appeared on the scene.

> The very windows by which the room was lighted down the length of its west side were packed with ladies, whose white handkerchiefs, waving and fluttering in the air at the end of the Bishop's speech, were an unforgettable factor in the acclamation of the crowd ... The clergy, who shouted lustily for the Bishop, were massed in the middle of the room; behind in the north-west corner was a knot of undergraduates, ... ready to lift their voices, poor minority though they were, for the opposite party.

This description is more suggestive of a crowd on a Saturday evening at the National Sporting Club than of an audience assembling to hear a scientific discussion at our most ancient seat of learning. The proceedings were opened by Dr Draper of New York, who gave a very dull address on the 'Intellectual Development of Europe considered with reference to the views of Mr Darwin.' The reading of this paper was followed by a discussion and it soon became apparent that the audience was considerably more interested in the views of Mr Darwin than in the intellectual development of Europe. The atmosphere suddenly became tense when the Bishop rose from his seat and all eyes were turned on him. It is reported that he spoke 'for full half an hour with inimitable spirit, emptiness and unfairness.' In his suavest episcopalian manner he assured his audience that 'there was nothing

in the idea of evolution; rock pigeons were what rock pigeon had always been.' Then rhetorically invoking the aid of feeling, as was his custom at the end of a sermon, he turned towards Huxley with a smile and begged to know: 'Was it through his grandfather or his grandmother that he claimed his descent from the monkeys?' Huxley's good intention not to speak disappeared with the rapidity characteristic of good intentions. Grasping the tactical advantage which the Bishop's descent to personalities had given him, he turned to Sir Benjamin Brodie, who was sitting next to him, and whispered 'The Lord hath delivered him into mine hands.' He rose slowly and deliberately to reply, and turning towards the Bishop, stated that he would not be humiliated by having a monkey for his ancestor, but that he would be ashamed to be connected with a man who used great oratorical gifts for the purpose of obscuring the truth. The report of the meeting continues as follows: 'No one doubted his meaning, and the effect was tremendous. One lady fainted and had to be carried out.' After the commotion had subsided, 'some voices called for Hooker, and his name having been handed up, the President invited him to express his views from the standpoint of Botany. This he did, demonstrating that the Bishop, by his own showing, had never grasped the principles of the "Origin", thereby showing that in spite of his First in mathematics, he was entirely ignorant of the very elements of botanical science.' The Bishop rose without making any reply and, surrounded by a phalanx of clergy, retired from the arena.

This particular episode in the history of the growing estrangement between two important departments of learning, both necessary to human welfare and both dealing with different varieties of human experience, has been described at some length because it illustrates the unskilful way in which institutional religion has always handled its conflicts with contemporary science. No better example could be given of the little understanding which exists between the upholders of religion and the champions of science. Darwin had evolved a

certain theory concerning the evolution of species and he had supported it with all the evidence which he could collect in its favour. But Darwin's explanation of the origin of species was only a theory, that is to say a hypothesis which at any time might have to be scrapped in favour of a more satisfactory one. Actually Darwin maintained a remarkably open mind with regard to all his theories. In his diary we find the following entry:

> I have steadily endeavoured to keep my mind free so as to give up any hypothesis, however much beloved (and I cannot resist forming one on every subject), as soon as facts are shown to oppose it.

But unfortuhately all scientists do not maintain as open a mind as Darwin endeavoured to keep, and within a few years of the publication of his book evolution through natural selection became invested with the sanctity of an inspired dogma. Long before Darwin died his theory of evolution had become as securely fixed in the foundations of science as the literal interpretation of the Biblical story of creation had become immovably fixed in the foundations of orthodox Christianity.

It is clear that Darwin had no desire to weaken the authority of religion and in the preface to *The Origin of Species* he expressed the hope that his views would not be regarded as being irreligious.

> There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms, or into one; and that, whilst this planet has gone cycling in accordance to the fixed law of gravity, from so simple a beginning endless forms most useful and most wonderful have been, and are being evolved.

But warmly though scientists welcomed Darwin's thesis, they were not prepared to make a place for a Creator in a universe

which to their way of thinking moved blindly along mechani cal lines, and the slight flavour of piety with which Darwi had infused his writings was easily ignored. As Julian Huxle has frankly put it, Darwinism pushes God

> into an ever greater remoteness until His function as ruler and a dictator disappears, and He becomes a mere first cause or a vague general principle.

So not only the Creator but also all ideas of design and pur pose have now been successfully eliminated from the more recent editions of Darwinism.

C. E. Raven is of the opinion that the Oxford Meeting marked a crisis in the growing estrangement between religion and science. When the two leaders left the library with their followers, religion and science parted company for good. Although no more words were spoken it had been mutually agreed that henceforth human experience should be separated into two departments, religion dealing with the inner world of the spirit and science with the external world of matter. Each party retired defiantly into its own citadel, religion taking with it an ancient cosmology which it sought to pre serve by ignoring all the discoveries of science, and science conserving its mechanical explanation of the universe by ignoring all arguments against it. Within a few years Darwin ism became sancrosanct.

> Discussion was replaced by eulogy; criticism came to be regarded as disloyal; conclusions originally put forward with hesitation and subsequently challenged by com petent authorities were asserted with a scarcely creditable evasion of their difficulties.[1]

But for a quarter of a century the unspoken gentleman's agree ment of the Oxford library was observed.

1. C. E. Raven, *Science, Religion and the Future*

> Scientists did not trail their coats at the religious; and Christians did not interfere with or dictate to scientific research.[1]

With the spread of the Darwinian doctrine to different sections of the community new meanings were read into it and new confirmations for old prejudices were extracted from it. Like the Bible, *The Origin of Species* provided texts by which almost any line of thought could be justfied with the help of the necessary adjustments. In Germany the doctrine of the survival of the strong and the elimination of the weak was used to support the views of the Prussian Junkers, who were convinced that nature clearly approved of their idea that the weaker nations must perish in order that the strong might evolve. The glorification of warfare expounded by Treitschke and Bernhardi was amongst the fruits of this Prussian version of Darwinism. In England, a country according to Napoleon inhabited by shopkeepers rather than by soldiers, the idea of evolution by natural selection provided excellent support for ruthless commercial competition and for a total disregard of the welfare of the sweated workers in England's fine new factories. Socialists opposed this view and pointed out that Darwin had given many instances of collaboration between animals, and that this being so, societies which were formed for the purpose of providing mutual aid had survival value. But the examples of co-operation between animals given by Darwin were completely dwarfed by the mass of material he had collected in order to illustrate the keen competition for the means of life, and they were soon forgotten by those who preferred to forget them.

Yet the idea stressed by the socialists was not merely a sentimental reaction from the view that nature is pitiless and cruel. It was based on fact. Darwin had warned his followers against committing the error of giving too narrow an interpretation to the term 'the survival of the fittest in the struggle for existence.' In *The Descent of Man* he stressed the point that

1. Ibid

the fittest are not necessarily the strongest and the most cunning, but that they may be also those individuals who are best able to combine and to give support to each other in the struggle for life.

> Those communities, he wrote, which included the greatest number of the most sympathetic members would flourish best, and rear the greatest number of offspring.[1]

But the followers of the scientist who has formulated any theory, instead of widening it, almost invariably proceed to narrow it down, and this happened in the case of Darwin and his theory of evolution. The animal world was soon pictured as a pitiless arena in which half-starved individuals carried on an inexorable struggle for food with complete disregard to all their fellows. Even Huxley, who in many ways was the ablest of Darwin's exponents, took this view and proclaimed that the animal world was on the same level as a gladiatorial show. He declared that the struggle was so pitiless that there was no need, as in gladiatorial struggles, for any spectator to turn his thumb down, for no quarter was ever given.

> The weakest and stupidest went to the wall, while the toughest and shrewdest, those who were best fitted to cope with their circumstances, but not the best in another way, survived.

Herbert Spencer alone seems to have taken the trouble to examine the crucial question as to who actually could be deemed the fittest.

It was only in the opening years of the twentieth century that a writer appeared to emphasize the importance of co-operation amongst animals as a factor in their evolution. Prince Kropotkin, whilst travelling as a youth in Eastern Siberia and Northern Manchuria, was struck by the many

1. *The Descent of Man*

instances which he saw of mutual aid and mutual support amongst animals. The climatic conditions in these regions were so severe that it was clear to him that without some degree of co-operation it would be impossible for any form of life to survive. He had observed so many examples of mutual support during his travels that he was fully convinced that it was an important factor in the preservation and evolution of species. When in 1888 he came across Huxley's *Struggle for Existence and its Bearing upon Man*, he felt that the book gave such an incorrect representation of nature as it is seen in the bush and in the forest that he decided to challenge its author's views. In *Mutual Aid: A Factor of Evolution* he pointed out that the animal species

> in which individual struggle has been reduced to its narrowest limits, and the practice of mutual aid has attained the greatest development, are invariably the most numerous, the most prosperous, and the most open to further progress.

A great number of observations drawn not only from the animal world but also from primitive human societies were brought forward in support of this thesis. Kropotkin pointed out that examples of mutual aid were particularly numerous amongst birds, and he cited the many cases in which by combining together small birds are able to mob the hawks and even the eagles which prey upon them. He stated that in the regions in which he had travelled the great majority of animals seemed to lead some form or other of communal life. The flat lands of the north were covered with countless colonies of mice, ground squirrels and marmots, whilst nearer the pole were to be found immense herds of reindeer and musk-oxen and numberless bands of polar foxes.

> The coasts of the ocean are enlivened by flocks of seals and morses; its waters by shoals of sociable cetaceans; and even in the depths of the great plateau of Central

> Asia we find herds of wild horses, wild donkeys, wild camels and wild sheep ... and how false, therefore, is the view of those who speak of the animal world as if nothing were to be seen in it but lions and hyænas plunging their bleeding teeth into the flesh of their victims! One might as well imagine that the whole of human life is nothing but a succession of war massacres.

I recall being very much impressed by the many instances of co-operation between animals that I witnessed when shooting in East Africa many years ago. On the Athi plains were large flocks of different varieties of antelopes and herds of zebras that collaborated in posting sentries to give alarm at the first approach of any danger. I had no desire to shoot a zebra, but often it was impossible to get within range of the antelope without some zebra sentry discovering me and making my presence known to the antelopes. Giraffes and elephants were also frequently found in company and apparently for a very good reason. The elephants had enormous ears and excellent hearing, but poor eyesight, whilst the giraffes were like sentries posted on watch-towers. When they combined their capacities it was almost impossible to get near them without being heard or seen. A still stranger combination was formed by the rhinoceros and the rhinoceros-birds which sat in a row on its back preying on the ticks and other parasites with which its skin was infested. These birds were always on the alert and generally discovered my presence long before their short-sighted host knew of it. With shrill cries and vigorous pecks they stirred the rhinoceros into action, and away the great beast swung with the birds precariously clinging to its back like outside passengers on a madly-careering coach.

There is much to be said in favour of Raven's view that Huxley's insistence on the cruelty and amorality of nature was due to the fact that although he was a brilliant scientist, he had a strong distaste for field-work and consequently seldom made personal observations of nature. Huxley had none of the field naturalist's delight in the study and observation of

the actual living organism, but preferred, as did his great contemporary Owen, to shut himself up in the laboratory and the dissecting-room. With no observations of his own to act as a corrective, he readily fell into the error of believing nature to be utterly brutal and callous. This caused him considerable distress, for he was an ethical idealist as well as a scientific realist and the two sides of his character were often in conflict. It is interesting to note that the characteristics which were blended in Thomas Huxley have descended separately, as though carried by different genes, to his two grandsons, taking the form of an apparently complete confidence in science in one of them and of a great interest in mystical religion in the other.

Seeping down through the strata of the scientists, the philosophers, the intellectuals and the politicians, Darwinism eventually reached the basic layers of society composed of ordinary men and women. Prior to its arrival at the lower levels of society many battles had been lost and won in the higher strata. Gladstone and Huxley had fought a literary duel over the drowned bodies of the Gadarene swine, Gladstone maintaining that the sacrifice had been essential to the curing of the man possessed of a devil and Huxley protesting that 'the wanton destruction of other people's property' could not be justified. By now the controversy had lost any of the remnants of dignity with which it had originally started and bore a strong resemblance to the periodic outbursts between town and gown which at that time were a feature of university life. The original theory put forward by Darwin had also acquired a great deal of new material which was really foreign to it, every man and woman interpreting and misinterpreting it in accordance with his or her intelligence and disposition. Even the very young were now affected by the thoughts of a biologist who had died before they were born.

Casting my mind across a gap of many years and closing my eyes, I can conjure up the picture of a schoolboy with hands very deep in his pockets and head thrust forward, pacing round a cricket ground on a summer evening. It is

so many years ago that I hesitate to claim any kinship with him, but his walk is vaguely familiar to me and I recognize him even although his hair has now lost its colour. Under one arm and almost hidden by it is a green bound book which he has just been reading, *The Origin of Species*. Being young, he is inclined to take himself and his thoughts too seriously, and from his expression at this moment he would appear to be not only serious, but acutely distressed. I do not need to be told his thoughts, for I can revive them, together with some of the discomfort which they caused him. What did it all mean? In the school chapel on Sundays clergymen talked of a merciful Father who marked even the fall of two sparrows to the ground, yet here was a book written by a scientist – and scientists knew everything – which clearly showed that nature was utterly callous. What could be more beastly than the story of the ichneumon fly which laid its eggs under an animal's skin so that when the grubs hatched out they could eat their way through the wretched creature's tissues? What was the use of talking all that pious nonsense about helping other people when the whole universe was being run on the principle of the stronger overcoming the weaker? If Darwin was right, and scientists were generally right, the whole of religion was a myth and the sooner one got rid of it and faced the unvarnished truth the better. Surely it was better to know this truth, unpleasant though it might be, than to go on living in an entirely imaginary world. After all, the real world had its compensations, and on a summer evening like this it seemed even to be filled with peace and beauty. Looking across the cricket pitch, the schoolboy could see a flight of rooks rising out of the tall trees by the side of the headmaster's house. It was as though a net had suddenly been flung in a wide sweep up into the evening sky, a net which slowly fell and was deftly gathered in. The mocking call of the rooks was heard again as they settled in the dark masses of the elms. Then the light swiftly died out of the sky and the air struck chill. The schoolboy abruptly turned on his heel and made his way back to a prefect's study in the School House.

Life in adolescence is far too exciting and too tightly packed with interest to be long disturbed by spiritual difficulties. Yet the problems of one generation are very similar to those of another, and even although Darwinism no longer causes distress it is representative of that attitude of mind which regards the universe as being only the result of the interplay of blind forces, and therefore meaningless, an attitude which it is the object of this book to combat. It will be useful to examine Darwin's theory of natural selection in greater detail and to attempt to discover to what extent it provides a satisfactory explanation of evolution.

CHAPTER V

Darwinism Criticized

G. K. CHESTERTON expressed his surprise at the hungry an unreflecting way in which the world swallowed what Darwi had given it, and he was inclined to blame Huxley for havin forced Darwinism down the throats of the public. Chesterto had a constitutional as well as an acquired dislike for th Darwinian theory and he was of the opinion that much o the mental dyspepsia from which the world suffered was du to the irritant it had been forced to swallow. In his opinio it would not recover its health until it had got rid of thi poison. But Chesterton, like many other people, took a wron view of the situation. Darwin was in no way responsible fo the theory of evolution, but only for a possible explanation o it, for the idea that everything in the universe evolved fro simpler forms had long been in men's minds. Long befor Darwin was born Kant and Laplace put forward the idea tha suns and planets were evolved from nebulæ, and their evolu tionary theory was accepted by the majority of scientists Goethe wrote that different forms of life were the result o the action of environment on structure; from the environmen of air had been evolved the eagle, from water had been shape the seal, and from the earth the mole. But as Goethe was mor famous as a poet than as a scientist it was assumed that he wa indulging in fantasy, and his theory of the evolution of life was never taken seriously. Evolution was also the centra theme in Herbert Spencer's books, and the idea that all form of life were derived from a common ancestor was so prevalen at that time that it would be ridiculous to regard Darwin as the originator of it. Men were convinced that they themselves were evolving, and this being so, it was natural that they should come to the conclusion that evolution was a general principle

applicable to everything in the universe. Huxley, therefore, can scarcely be accused of having stampeded an unthinking world into accepting a novel theory. Actually, Huxley was never entirely convinced by Darwin's theory of evolution and maintained that the evidence which Darwin had produced, although strongly suggestive, was insufficient to prove conclusively that species had been produced by the action of natural selection.

Darwinism is such a misused word that it is necessary to be clear as to its meaning. It means first an acceptance of the view that all living organisms, including man, have been evolved from lower forms. It means that one believes that because many more animals and plants are produced than can possibly survive, those which happen to be stronger and to be better equipped for living are more likely to survive and to succeed in reproducing themselves. This may be looked upon as being a self-evident fact which is not in need of any further proof. It means the recognition of another equally obvious fact, namely, that individuals are not uniform in structure, like mass-produced goods, but are distinguishable from each other by slight variations, some of which may prove of advantage to them in the struggle for existence. It means, finally, an acceptance of Darwin's particular theory, namely that those variations which are advantageous will be so strengthened by the action of natural selection that in course of time they will be sufficiently great to account for the marked differences which distinguish one species from another and one genus from another.

It must be borne in mind that Darwin never claimed that natural selection was the *only* factor in the production of new species, but stated that it was the main 'but not the exclusive means of modification.' Of the other factors in evolution he had little to say beyond expressing the opinion that the factor on which Lamarck had placed such emphasis, namely, the inherited effects of the use and disuse of parts, must be taken into account. In thus referring favourably to the accumulative effect of use and disuse on structure he was supporting the

views not only of Lamarck, but also of his own grandfather Erasmus Darwin – views which had hitherto had but a poor reception in the scientific world.

In Darwin's day very little was known about heredity, and there was no difficulty in assuming that characteristics acquired by many successive generations would in course of time reappear in their offspring at birth. The idea was later believed to have been rendered untenable by the work of Weismann published three years after Darwin's death. Incidentally, it is doubtful whether Darwin would have welcomed Weismann's conclusions had he survived to hear them, for the elimination of the factor of the effect of environment on structure placed an excessive strain on his own explanation of evolution. Natural selection was now called upon to explain more than Darwin claimed that it accounted for.

The laws which controlled the appearance and the inheritance of the variations on which selection acted were unknown to Darwin, but during the course of his painstaking researches he accumulated enough material to allow him to formulate a theory of heredity. This he called the theory of Pangenesis (1868). He suggested that every cell in an organism gave off from itself minute particles, called gemmules, which after circulating freely in the body finally came to rest in the germ, or reproductive, cells. These tiny fragments of protoplasm were supposed to be capable of multiplying and of providing the mechanism by which the characteristics of every tissue in the body were transmitted to future generations. When the germ cells developed into a new individual the gemmules multiplied with them and determined its characteristics. Darwin's theory of Pangenesis was the first serious attempt to explain the mechanism of heredity, and although it never gained any wide acceptance, it undoubtedly stimulated work on this subject.

It is not within the province of this book to discuss the difficult subject of genetics, but in order that the material which is to follow may be understood, it is necessary to summarize briefly some of the modern ideas about heredity. It

must be kept in mind that natural selection by itself is incapable of bringing about any change, for natural selection is what Professor Fairfield Osborn has called the 'non-energetic factor' in evolution. The 'energetic factor' is the appearance and transmission of variations, natural selection merely acting as a filter which rejects some of these variations and allows others to pass. It is the 'energetic factor' in the evolutionary theory which chiefly interests us, and this being the case, more must be said about it.

No name is more revered by geneticists than that of August Weismann, for it was he who discovered the physical basis of heredity, the means by which variations are transmitted from one generation to another. In *The Theory of the Continuity of the Germ-Plasm*, published in 1885, Weismann showed that at a very early period the fertilized ovum (which later becomes the embryo) separates into two parts, a somatic half and what Weismann called a propagative half. The somatic half, as its name suggests, grows into the body of the new individual, whilst the propagative half forms only the germinal epithelium, or reproductive glands. A clean and a very early division is therefore made between the cells which are to form the body and those highly specialized cells which become the sex glands and eventually give rise to the new generation. A man's body is doomed to die, but in a way his reproductive cells are immortal, for they will live on as his children, his grandchildren and their descendants. Even although more than 99.9 per cent. of a man will perish, the remaining fraction of him will continue to live so long as his descendants multiply. All that the somatic cells, which form the main bulk of his body, are really called upon to do is to provide a refuge in which the immortal cells within him can find temporary lodging and sustenance. It is a little bit discouraging to our self-esteem to be looked upon as being only useful wallets for conveying the valuable germ-plasm down the ages, wallets to be thrown on the scrap-heap when we have served Nature's purposes. But such is our rôle in the eyes of the geneticists.

When Darwin propounded his theory of Pangenesis, his

gemmules were purely hypothetical structures, of the existe
of which there was no direct evidence. The genes which
now looked upon as being the physical basis for the tra
mitting of characteristics from parent to child can actually
seen. They are an integral part of the complicated structure
every cell nucleus. When a cell is about to divide, its nucle
goes through a number of complex and interesting chang
The twisted filament which is its most conspicuous featu
breaks into rod-like bodies, the number of which remai
constant for any particular species of animal or plant. The
filaments are called chromosomes. When appropriately stain
and examined under a high-power miscroscope, they look li
the pieces of a broken necklace along which are strung minu
beads. These beads are believed to be the physical structur
by which the characteristics of the parents are transmitted
their children. Since the embryo is made up of a contributi
of chromosomes from the male and the female cells, it deriv
characteristics from both parents. This does not mean th
the future child will show the features of each parent in equ
degree, and indeed we know from experience that this
seldom the case. This inequality in inheritance is due to t
fact that many of the genes which a child inherits do n
develop; they remain latent, to be passed on and develop
the next, or perhaps in a later generation. What is of impor
ance from the point of view of Darwin's theory of evoluti
is that characteristics from a parent are handed on as comple
and separate entities. One of Darwin's difficulties was
understand how a new and very slight variation in a pare
could be preserved in the offspring, that is to say, how it cou
avoid being watered down or even neutralized by crossin
He felt that characteristics from the two parents would i
evitably be diluted in the offspring as two drops of differe
colours are diluted when they run together. In this way a ne
variation would be so weakened on crossing with the origin
type that it would virtually disappear. The essence of Mende
ism and of all modern theories of heredity is that the genes,
units, of heredity do not fuse but remain unchanged whe

combined with other genes. They may even remain latent in the stock for a long time, manifesting their presence only when conditions become favourable to their development. What is of almost equal importance is that the effect of one set of genes can be altered by the action of another set of genes. There are, for example, cases where some slightly deleterious gene has been rendered harmless, or, in the chemist's phrase, 'buffered' by new combinations with other genes. Julian Huxley gives a beautiful example of this taken from the breeding of domestic dogs.

> In producing the show type of St. Bernard man has encouraged features characteristic of abnormal overgrowth of the pituitary gland: yet St. Bernards are not themselves abnormal, as a man with comparable characteristics would be. However, when St. Bernards are crossed with other breeds, like Great Danes, a considerable number of the offspring show actual pathological symptoms. In producing his ideal of a St. Bernard, man has selected for genes making the pituitary abnormal: but he has also aimed at healthy dogs, and so has automatically selected for other genes which would prevent the first genes from exerting any major harmful effect. But when these 'buffering' genes are diluted or reduced in number by crossing, the potential abnormality of the pituitary can become actual.[1]

The fact is that old genes can be recombined so as to provide new variations and consequently more material on which natural selection can act. Modern research in genetics has also discovered another factor which was unknown to Darwin and which provides favourable material for the sifting action of natural selection, namely, the existence of mutations. A great deal has been learnt about these mutuations or sudden marked variations in genetic constitution from observations on that friendly collaborator of the geneticists, the fruit-fly, Droso-

1. Julian Huxley, *Discovery* (January 1943)

phila. Every now and then a 'sport' or mutation appe amongst these flies, so that it differs markedly from its fello in the colour of its eyes, in the shape of its wings, in its reacti to light, or in the duration of its life. Not infrequently the sa type of mutation suddenly turns up in a stock of flies oth than that on which the experiments are being made. By mea of skilful crossing it has been possible to add together a gr number of these different mutants into a single strain, w the result that an insect is obtained which differs so mu from its fellows that an entomologist when confronted w it would identify it with another species of fly. It would appe that all plants and animals are liable to these sudden chang brought about by violent disturbances in their germ-plas Hitherto no satisfactory explanation has been given of t cause of them, and all that we really know is that such chang occur in every type of organism. But recently some expe ments were carried out in the University of Texas which a of great interest to geneticists. Dr H. J. Muller bombarded number of fruit-flies with X-rays. Now, although this trea ment is liable to damage the germ-plasm so badly as to pr duce sterility, Muller found that the flies which still manag to breed had offspring in which there was a remarkably hig percentage of mutations. By this method he was able to obta flies with white eyes instead of red, with small wings in pla of large ones, and with forked bristles in place of straight one It is possible therefore that mutations are the result of u known external influences which cause disturbances in th germ-plasm, even although they have no appreciable effect o the body. It has even been suggested that cosmic rays pen trating the earth's atmosphere from vast distances of spa may be responsible for the appearance of mutations. B although these abrupt changes or mutations are of great i terest to the geneticists, it is now thought that evolution pr ceeds more by the leisurely way of variations rather than b these sudden jumps. Mutations are believed to provide u reliable material for natural selection, because the chang which they produce are rarely continued in the same directio

It is significant that out of four hundred mutations seen in one species of fly all but two seemed disadvantageous to it and none showed any disposition to develop in any definite direction.

Having summarized modern views on heredity, we are in a better position to discuss Darwin's theory that evolution has been brought about by the action of natural selection on accidental variations or mutations. We have accepted two of the ideas which enter into the theory of natural selection, the first that the stronger and better adapted individuals are more likely to survive in the struggle for existence, and the second that all forms of life are subject to variations. Because we know so little about the cause of these variations we have to look upon them as being accidental. An important question now arises which we shall have great difficulty in answering. Is it probable that in process of time new species will be evolved by the selective action of the struggle for survival on these random variations? Evolution cannot be directly observed, and consequently no certain answer can be given to the question. All that we can do is to examine the theory of natural selection from the point of view of probability and then decide whether it is sufficiently plausible to serve as a useful working hypothesis. And it must be remembered that all scientific theories, even the most honoured of them, are in reality only working hypotheses to be retained so long as they prove useful to us, and to be cast aside whenever a theory which accounts for a larger number of observed facts becomes available to us. Theories are but temporary resting-places for thought, resting-places which at any moment may have to be abandoned on account of the discovery of some new fact which is incompatible with them. It is necessary to stress this point because a wrong attitude is adopted by so many people to scientific theories. Either they regard them with such veneration that they cannot conceive of their being wrong, or else they declare that they have no confidence in scientific theories because they are always being changed. Both conceptions of scientific theories are equally absurd.

Before arriving at an evaluation of the degree of probabil attached to the Darwinian theory it will be necessary to d cuss one of its inherent weaknesses. It must be remembe that all the parts of an organism are co-ordinated and that o part cannot function properly unless the other parts necessa for its activity are equally well developed. Let us take as example the varied structures which are necessary for t function of vision. In order to see, a great many different a widely spread structures are required, not only an eye w all its internal contrivances, but also special centres in t brain, and elaborate connections between the eye and t brain.

It is believed by biologists that the first stage in the evo tion of an eye must have been the appearance in some prir tive animal of a small area of skin which had become sensiti to light. But this alone would not have been of any benefit the animal or have conferred on it any survival value. T primitive eye would only begin to be of advantage if at t same time there appeared early traces of visual centres in t brain, and primitive ocular nerves and visual tracts. Howev efficiently the eye itself developed, the animal would not benefited until all the inter-related structures for vision we present and properly co-ordinated. If, as Darwinists believ variations are accidental, it becomes difficult to understa how so many variations could have agreed to arise simu taneously in different parts of the animal's body so as have conferred on it the advantage of sight. And it is sig only which had survival value, for the existence of an isolat patch of sensitive skin would be of no advantage to its po sessor, and might even prove a handicap to it. Darwinis realize this difficulty and have two different methods of mee ing it. The first is to make use of the so-called law of corr lation, namely the idea that a change is never localized in single part of the body, but invariably has its recoil on oth structures. Darwin tried to illustrate this principle of corr lation by citing the fact that white cats with blue eyes a generally deaf, and that dogs which lack hair usually posse

poor teeth. But as Bergson has pointed out, this is not an instance of correlation but of associated changes. Hair and teeth are developed from the same structures, and factors which damage one are likely to damage the other. It could never explain the development of vision. For vision a series of complementary changes would be necessary, and these changes would have to be so well adjusted and co-ordinated as to provide the elaborate mechanism which is essential for seeing. However unwilling the Darwinists may be to call in the assistance of an inner directing principle in order to get over this difficulty, it would seem necessary for them to do so if they are to attempt to account for the development of vision. This need becomes still more pressing when we realize that organisms as widely separated as a vertebrate and a mollusc have developed the capacity to see, and that the structures by means of which they have achieved this miracle are very similar in nature. Bergson has pointed out that the eye of a Pecten (a common mollusc) possesses a retina, a cornea and a lens of cellular structure much like our own. How is it credible that a precisely similar chain of accidents has happened in two such widely divergent branches of the evolutionary tree as the vertebrates and the molluscs?

> How could the same small variations, incalculuable in number, have occurred in the same order on two independent lines of evolution, if they were purely accidental? And how could they have been preserved by selection and accumulated in both cases, the same in the same order, when each of them, taken separately, was of no use?[1]

Darwin himself could not find an explanation of the far smaller difficulty attached to the evolution of whalebone. The whalebone whales which feed only on the tiny creatures that swarm in the surface of the sea are provided with sieves of whalebone which fit round their mouths in place of teeth.

1. Henri Bergson, *Creative Evolution*

Their method of feeding is to take a large mouthful of ocea and to squirt it out again through the sieve of whalebon They then lick off and swallow down the masses of tin creatures adherent to the sieve. Although this would appea to be a tedious method of obtaining nourishment, it is th method most suited to their digestive apparatus. The sieve according to the evolutionary theory, probably arose in th whale's forerunners as a series of ridges or bristles, an Darwin found it difficult to understand how, *before* the developed into a fully efficient sieve, they could possibly hav been of any advantage to their possessor. He found no satis factory answer to the riddle.

The second way of getting round the difficulty of accountin for the development of a new and complicated organ is t suppose that the genes for the development of one part of are transmitted, but that they lie latent until the other gene needed for the other parts happen to be added to them, whe the whole of the apparatus necessary for the new activity ca begin to develop. Thus in the case of vision it is suppose that the genes for the future eye lie latent until in course o time out of the lucky bag of chance come the genes for th visual tract and the visual areas of the brain. But when i becomes necessary to resort to such an elaborate explanatio as this in order to safeguard a particular theory, surely th time has arrived for critically re-examining the original theory

The neo-Darwinists have other difficulties to contend with They have admitted that variations and mutations are ran dom sporadic events which happen accidentally and are seem ingly without design or persistent aim. Yet it is impossibl to study the evolutionary history of animals without coming to the conclusion that evolution is pursuing very definite and practical trends. In some cases evolution persists in the same direction, but in others, after continuing for a time in one direction, it suddenly begins to move in another. The elephant provides us with the excellent example of this type of evolu tion. It is believed by the evolutionists that the original trend of the precursor of the elephant was towards the development

of a four-tusked animal with a long lower jaw. Later, when the animal grew larger, this arrangement became disadvantageous. The head with its enormous tusks proved so heavy that it could only be carried by a short thick neck, whilst the thin lower jaw proved a poor implement for rooting in the ground. Evolution, therefore, changed its direction; a short thick and tuskless lower jaw was substituted for the previous one, and a trunk was developed which kept the animal in touch with the ground. How difficult it is to account for such steady, progressive and seemingly purposive changes by the action of selection on random variations. But because neo-Darwinists dislike the word purposive, they have invented a new theory called the theory of orthogenesis. This theory is not very popular, but it can be used as a crutch for evolutionists who cannot struggle along without it. It postulates the existence in the protoplasm of every animal of an innate independent tendency which helps to maintain its evolutionary progress in a certain direction. This hypothetical innate tendency may be looked upon as being a kind of protoplasmic destiny. Professor Fairfield Osborn is of the opinion that the series of fossils left by the horse's ancestors cannot be explained without the help of orthogenesis. But the majority of neo-Darwinists are inclined to regard this as pandering to weakness, for the postulating of an inner directing force is too reminiscent of the *élan vital* of Bergson to be to their liking. They prefer to remain faithful to the pure doctrine of natural selection and to assert that even if the early stages of a new structure do not *appear* to confer any advantage on its possessor, they actually do so.

Natural selection is looked upon as being the means by which new species are evolved out of minor variations and as being a force which encourages change rather than a perpetuation of standardized forms of life. But as Darwinists themselves have shown, natural selection may act as potently in one direction as in another and may be as effective in conserving as in altering a species. A good example of this is given in *The Science of Life*. Because the English sparrow is so well

adapted for living it has spread all over the world and i plentiful in America. After a severe storm in the United State a number of sparrows were found beaten down to the ground and lying there in distress. They were taken indoors and some of them revived with suitable treatment. Careful measuremen of the wings showed that these victims of the storm comprised fewer specimens with wings of average length and more with wings that were either unusually long or unusually short. In other words, selection in the form of a storm had tended to conserve the ordinary type of sparrow and to eliminate those with wider variations in the wing length.

We have seen that the Darwinian theory cannot be proved or disproved by direct observation because change proceeds so slowly. The authors of *The Science of Life* have calculated that a hundred thousand generations would be necessary before a new species could appear. Drosophila breed very rapidly, and for this reason they are a favourite object of study, but even when working with the fruit-fly three thousand years would have to pass before a hundred thousand generations had been produced. If, therefore, Homer had been a biologist instead of a poet and had started an experiment with drosophila to prove or disprove Darwin's theory of evolution, and if the experiments had been carried on continuously, we should only now be approaching the moment when we should begin to see the results.

As we have no direct evidence of evolution by natural selection we are compelled to rely only on indirect evidence, and, this being so, our answer to the question must be in terms of probability and not of certainty. If we believe that given a sufficient length of time – and science is liberal in the time that it allows us – the action of natural selection on random variations is capable of producing the changes which distinguish species from species and genus from genus, we cannot believe this, we must reject it. The decision must necessarily be a personal decision, and personally I can no more accept this as a satisfying explanation of evolution than I can accept the idea that seven monkeys seated at typewriters

and fumbling with their keys could even in a million years produce the sonnets of Shakespeare. Natural selection may be a factor in the production of new forms of life, but it cannot explain it. The blind forces likened by Julian Huxley to those that cause the falling of a stone and the ebb and flow of tides could not in my opinion bring into being the ingenious contrivances which distinguish one animal from another. It is impossible to avoid the conclusion that some intelligence is at work, either an intelligence in the animal itself or that Great Intelligence which has been responsible for the creation and the evolution of the whole universe.

Scientists have had time to discover the shortcomings of the Darwinian theory of evolution, and many of them are in doubt as to how far it explains the origin of species. J. B. S. Haldane sums up the opinion of many biologists in the following paragraph:

> No competent biologist doubts that evolution and natural selection are taking place, but we do not yet know whether natural selection alone, acting on chance variations, will account for the whole of evolution. If it will, we shall have made a big step towards understanding the world; if it will no more account for all evolution than, for example, gravitation will account for chemical affinity, as was once believed, then biologists have a bigger job before them than many of them think.[1]

I am in entire agreement with this last sentence. Darwin's theory of evolution is retained because scientists have found nothing more satisfactory to put in its place. A mechanical explanation of the procession of life on this planet is required and no such explanation, other than that offered by Darwin, is forthcoming. This being so, there is no alternative to that of retaining Darwinism with all its weaknesses.

1. J. B. S. Haldane, *Possible Worlds*

CHAPTER VI

The New Science of Psychology

THE separation of the sum total of human knowledge into great number of different departments may be necessary, bu it is attended with grave dangers when the specialists dealin with these different categories of knowledge lose all touc with each other. Departmentalism undoubtedly makes fo efficiency, but it has many drawbacks, and this tendency fo specialists to become isolated from each other is the chief o them. One instance of this, namely, the estrangement betwee religion and science, has already been given, and anothe example will be found if we study the history of psychology

Up till the latter half of the last century the study of man psychic processes, the inner world of the mind, formed a pa of philosophy and religion, and it is obvious why this shoul have been so. The investigation of the mind involved a con sideration of so many metaphysical problems that it wa believed, and rightly believed, to be inseparable from phi osophy and religion. But actually this is true of all other in vestigations, for, as the modern physicists have discovered it is impossible to study external phenomena without at th same time considering the mind which studies them. Physicis have not only to make their observations of the external world but also to consider the nature of the knowledge which ha thereby been obtained. Whenever scientists carry their re searches far enough in any direction they always reach tha shadowy land in which they are forced to grapple with meta physical enigmas. The philosophical implications of the stud of the mind are so immediate and so apparent to everybod that for a long time it was a debatable point whether psycho logy could ever be regarded as being a science or whether

should always remain a part of philosophy. To accept it as a science would necessitate the abandonment of the precise methods of investigation on which science depended, namely, experimentation and measurement, for it is clear that mental events cannot be weighed. But to deny that science was capable of studying the mind was to admit that there were certain imponderables in nature with which science was unable to deal, and this was an admission which might have wide and disconcerting repercussions. The choice was a difficult one for psychologists, but, encouraged by the extension of science into many new fields of research, psychology was finally detached from philosophy and admitted to the rank of a science. Since mental events could not be studied by the technique used in the investigation of material objects, new methods of research had to be devised.

The scope of science has now been so generously extended and so many new fields of research have come under its sway that in the eyes of many of the younger scientists the word 'science' has become a synonym for organized knowledge. Formerly science was variously defined as 'measurement,' as 'organized common sense,' and as 'the discovery of uniformity behind multiplicity,' but it would now appear to be co-extensive with human knowledge. This marked enlargement of the former limits of science has resulted mainly from two events, first, the acceptance of psychology as a fit subject for scientific investigation, and, second, the emphasis now placed on the relative and subjective elements in the new discoveries of physics. Instead of science being swallowed by philosophy, it is philosophy which is now in danger of being swallowed by science.

Although psychology was admitted to the sciences, it was not at first looked upon with much favour. Intelligence tests, reaction times and the investigation of patterns of animal behaviour were reputable methods of research, but there was a borderland to psychology which provided ample opportunity for quackery and charlatanism. There were three directions from which the older and more reputable sciences could ap-

proach the new subject and rescue it from the charlatans and the well-meaning but poorly equipped amateurs who had interested themselves in it. The biologists could approach it from the angle of animal behaviour, the physiologists from that of the structure of the central nervous system, and the doctors from the standpoint of functional disease. All these neighbouring departments of science set to work. Each of them threw light on some part of the new subject, but none were capable of lighting the whole of it. As a result of this division of labour there soon appeared three psychologies, that of the biologists, that of the physiologists and that of the medical men. Only two of these could really be considered to be scientific, for since medicine makes such extensive use of empiricism it must be numbered amongst the arts rather than amongst the sciences.

The psychology which made the most rapid progress was that which was based on the investigation of the structure and the physiology of the central nervous system. The discovery of various centres in the brain and the unravelling of the complicated structure of the spinal cord provided valuable data for future work. Pavlov must be given the credit for laying down the foundations of the physiological variety of psychology, and this being the case it will be necessary to consider his work in some detail.

When Pavlov started his animal experiments he had no idea that they would lead him to a new psychology of behaviourism. All that he intended to do when he embarked on his work was to investigate the means by which the secretion of the various digestive juices was controlled. His first discovery was that the activity of the salivary glands was regulated by and adjusted to the precise needs of the organism by the controlling action of its central nervous system. When dry food was introduced into the mouth of a dog a large supply of watery saliva was produced; if the food was moist the flow of saliva proved to be much less watery and copious. These variations in the activity of the salivary glands were entirely automatic and entailed no mental processes on the

part of the dog. They were brought about by a reflex action starting in the taste buds of the dog's tongue and palate, and ending in the nerves which supplied its salivary glands. Pavlov next found that a flow of saliva could be provoked through the special senses without any food being introduced into the dog's mouth. For example, if meat were placed near the dog, slimy saliva flowed into its mouth at the sight of the meat; if instead of meat an unpleasant medicine which had previously been forced down the dog's throat were brought into its presence, a watery and defensive saliva immediately appeared. Obviously neither of the reflexes which had been evoked by sight was inborn, but was dependent on memories stored up in the dog's brain, for they never occurred on the first occasion on which a dog caught sight of meat or smelt an unpleasant medicine. They were absent also if the dog's cerebral hemispheres had previously been removed.

Having reached this point, Pavlov decided to investigate more fully the nature of these psychical responses. He was not a psychologist, but a physiologist who almost by accident had stumbled on a psychological problem which he felt it would be possible to solve by the ordinary experimental methods employed in physiological research. Further investigation showed that the flow of saliva could be provoked by any stimulus which he cared to select provided that this stimulus were repeated sufficiently often. For example, when a ticking metronome was brought into the presence of a dog and a few seconds later a plate of food was swung down from a place of concealment on the end of a string, the dog learnt to associate the sound of the metronome with the reception of food, and as soon as the metronome started ticking began to secrete saliva. Pavlov called these learnt responses conditioned reflexes, to distinguish them from the inborn or natural reflexes of the body. The path taken by the nervous impulse was found to be different in the two cases. In the case of the inborn unlearnt reflex it made a comparatively simple journey from the taste buds of the tongue and palate to a centre in the base of the brain and back again to the salivary glands. The condi-

tioned or learnt reflex entailed a more tortuous journey; the ticking metronome sent messages along the auditory nerve to the auditory centre in the cerebral hemisphere, thence along association fibres to another area of the brain and back to the salivary glands. In this case the cerebral hemispheres played the part of a switchboard which brings two previously disconnected wires in contact with each other. Pavlov found that by changing the experiment, the path taken by the nervous impulse could be made still more complicated. If, for example, a large black square were placed in front of the dog, then removed and the metronome substituted, the dog in time learnt to associate the square with the metronome and therefore with food. Because he salivated on seeing the square, it was obvious that the visual centres had been connected by association fibres with the auditory centre in the brain. He was also able by training to provoke negative as well as positive responses. If the tick of the metronome was slowed down and food was then removed the dog learnt to associate the new rate with the loss of his meal, and the flow of saliva was inhibited whenever the metronome was adjusted to the slower rate. He concluded from this and from similar experiments that all the operations of the cerebral hemispheres are controlled by two antagonistic processes, excitation and inhibition. He also demonstrated that both conditioned and unconditioned reflexes could be inhibited by reactions occurring elsewhere in the body. Almost any response could be elicited by suitable training: for example, a painful electric shock could be made to provoke a copious secretion of saliva accompanied by obvious signs of pleasure, or a pleasant stimulus to inhibit the flow of the saliva and to cause signs of displeasure. In short, Pavlov could mould the dog's behaviour as he liked, suppressing at will the animal's natural responses and substituting for them entirely abnormal reactions. For the dog he could be both God and the devil. He could teach it to enjoy evil or encourage it to prefer good. As the result of his researches he came to the conclusion that the brain is a receiving station at which arrives a continuous stream of excitatory and inhibitory

impulses, and that it is the interplay of these antagonistic forces which determines the pattern of the dog's behaviour. What is true of the dog is, in his opinion, equally true of human beings. A child is born with a comparatively few natural reflexes, but from birth onwards he acquires a large number of new ones by means of which he is equipped for the various activities which are necessary for living. As the child grows older he begins to find that it is necessary for him to inhibit some of his inborn responses and even some of those which he had acquired during the early months of his life. His primitive pattern of behaviour is continually having to be altered by the intervention of new inhibitions and, according to Pavlov, this process of finding new adjustments to life is entirely automatic, choice playing no part in it.

When Darwin introduced his theory of mechanical evolution it was warmly received by his fellow scientists. Pavlov's theory of a mechanical man had an equally good reception. His work entirely changed the status of psychology, for with the reflex arc as a psychic unit, comparable to the atomic unit used by the physicist, the mind could be studied objectively and not as formerly by the unscientific method of introspection. Psychology had now justified its inclusion among the sciences.

The new psychology of behaviourism was developed in America by J. B. Watson. His work is so well known that it is unnecessary to describe it in detail. Watson believes that a child is born with three natural behaviour responses; he evinces fear when he hears a loud noise or when he is left with so little support that he begins to fall and he displays anger when his bodily movements are forcibly restrained. By making use of these inborn responses Watson was able to change the behaviour of a child in the same way as Pavlov had previously changed that of a dog. He could condition a child to express fear where previously he had expressed pleasure, and pleasure where he had expressed fear. For example, if after an infant had learnt to enjoy playing with a white rat a loud noise was produced whenever the rat entered his play-

pen, the child in time evinced terror whenever he caught sight of his old playmate. Having conditioned him to be frightened of his former pet, Watson set about reconditioning him and restoring his former attitude to the animal. At the moment at which the child was enjoying his food and exhibiting signs of pleasure the rat was brought to the opposite end of the room and then removed before the child had had sufficient time to develop a complete fear reaction. Gradually the time during which the rat was in the room was increased and its distance from the child diminished. In the end all fear of it was lost and the old relationship between rat and child was fully restored. He had been reconditioned to the rat.

In older children conditioning is made easier by the fact that they are able to speak. A language allows us to substitute a word for an object, and we are able to present to the mind objects which are not actually present. If I am afraid of snakes it is not necessary to introduce one into my room in order to elicit my fear responses. These will be manifested if someone near me suddenly shouts 'Snake!' Some degree of response may even be shown in my expression when I come across the word 'snake' in a book which I am reading. When we react in the same way to a word as we would react to the object which it represents, we may be said to know the meaning of the word. By the skilful use of words we can be conditioned into believing almost anything, and in this lies the terrible power of propaganda. Propaganda can play for us the part which Pavlov played for his poor frustrated dogs.

In *Brave New World*, published a few years before the war, Aldous Huxley gave us a vivid picture of what might happen if State officials were to make use of the knowledge given by Pavlov's and Watson's researches. He described the official conditioning of children in accordance with government requirements. Sitting in rows on the floor they were subjected to the same phrases, repeated and repeated by a gramophone, until the words sank into their brains and became a part of their mental background. Whatever the reaction of the children to their lessons may have been at the beginning, they

eventually came to accept what they had been so often told. Their minds were so much plastic material on which the gramophone needle engraved its message.

Conditioning has become only too familiar to us, although not exactly in the form described by Huxley. Even before the outbreak of total warfare we were subjected to it. Wherever we happened to be, whether walking in the street or travelling in bus or train, or merely sitting at home reading a newspaper, we were under the treatment of the advertisement expert. Now that propaganda has become one of the most deadly weapons in the armoury of total warfare, the work of conditioning has been speeded up. One has only to rotate the button of a wireless set and thereby to tune in to various wave-lengths to enter a nightmare world of conditioning. The stratosphere which surrounds this planet is no longer a zone of celestial silence, but a bedlam of specious words, a region in which there circulates a fantastic confusion of tongues. A host of rival propagandists proclaim their spurious wares in the world's market of lies, and through listening-in millions of simple folk receive their daily hose of conditioning. As early as 1933 Hitler explained to Rauschning the important part that wireless would play in his plans. He had been much impressed by the efficiency of British propaganda in the First World war and was determined that Germany should make better use of it in the next. 'Our strategy,' he said, 'is to destroy the enemy from within, to conquer him through himself. Mental confusion, contradictions of feeling, indecision, panic – these are our weapons.' There is a Grand Guignol quality about this modern development of the work of Pavlov and Watson, this scientific poisoning of the mind. If men are unfit to control the immense physical powers which they have made available to themselves, how much less fit are they to control the thoughts and emotions of their fellow creatures!

When one looks at the evils of this war, in one way the blackest of all would seem to be this scientific corrupting of the mind. Watson and others have clearly shown that there is no material more easily conditioned than the plastic material

of a child's mind, and there are few activities to which the totalitarian countries have given more attention than the conditioning of their children. This has been done with scientific thoroughness and by means of youth movements, holiday camps, parades and military juvenile corps the younger members of the State have been converted into insane little sadists. So successfully has this been carried out that in the opinion of some psychologists it will be impossible in many cases to undo the damage by any form of re-education. *But conditioning is by no means confined to times of war or to totalitarian countries. The fact that newspapers are controlled by a small number of wealthy proprietors, the cinema by a few great companies, and the wireless by a single corporation places power in the hands of a small number of people who can use it as they will. Since profit is the main concern of newspaper proprietors and cinema companies, there is no incentive to use what they own for educational purposes. They supply whatever happens to be most easily marketable, and in the cinema world the most marketable products happen to be those of Hollywood. No comment is necessary.

Scientists cannot be held responsible for the use that is made of their discoveries, for they are only concerned with the one value, truth. The 'truth' which has been reached by the behaviourists is that all that we do, feel or think is determined by our inborn and acquired reflexes. For the behaviourist this book is only the printed expression of the conditioning which its author has previously undergone, a record of his acquired reactions. For them the approval or the disapproval of the reader is an equally subjective and accidental phenomenon which has no more relation to objective truth than the behaviour of Watson's child had to the real nature of the rat. Thinking, for the behaviourist, is merely inner talking, the verbal expression of a number of conditioned reflexes. When

* Since this book was written the experts employed by the Kremlin have shown how effectually a man's natural responses can be removed and new ones substituted for them. The methods used in preparing a prisoner for trial before the People's Courts are secret, but they can be guessed.

an infant plays with his toys he talks to them aloud, at a later stage he mumbles to himself, and when older still, he talks inwardly without emitting any sound. According to the behaviourists this silent conversation continues unbrokenly to the end of our lives and constitutes our thinking. All mental processes are but manifestations of the muffled movements of the glottis!

When we examine the tenets of the behaviourist school of psychology dispassionately – and according to Dr Watson this is an impossibility, since our reactions to his teaching have already been conditioned – a great deal of truth may be found in them. To realize how mechanical is much of our thinking we have only to turn our attention inwards and listen to the incessant murmur of inner talking which passes for thought. Having done this, it will be difficult to avoid the conclusion that most of our thoughts are automatic and that many of our opinions are only rationalized prejudices. But after reaching this view care must be exercised before proceeding further. It must be remembered that Pavlov and Watson have made use of the simplification process always employed by scientists. They have abstracted from what they studied only those phenomena which were relevant to their research and they have neglected, or even denied, the existence of all phenomena with which they could not deal.

> States of consciousness, writes Watson, provide no objective data that admit of scientific examination, nor can the behaviourists find any evidence for mental existence of any kind.

Consciousness is therefore completely ignored by Watson, and by means of this simple device he is able to assure us that he can find no evidence for mental existence. It would indeed have been remarkable if he had found any evidence. Watson has done for the new science of psychology what Darwin long ago did for the old science of biology; he has brought his particular speciality into line with nineteenth-century physics.

But none of us are entirely consistent, and although Watson does not specifically say so, he would seem to imply in his writings that the particular system of psychology which he has evolved is something more than a detailed description of his own acquired reflexes.

The doctrine of behaviourism made an immediate appeal to the lay mind when it first appeared for the same reason that nineteenth-century materialism became popular. By a process of simplification Watson provided an explanation of the complex subject of human behaviour which could be readily understood. Behaviourism, like Freudism, relieves those who accept it of all sense of responsibility; they must act in accordance with their nature and to struggle to act otherwise would be a useless effort. It is not surprising that it was a teaching which was well received by the disillusioned generation that grew up after the First World War. But I have a strong suspicion that Watson conducts his own life on the supposition that thought entails more than a movement of the glottis, and that although he has dismissed the factor of consciousness as being of no importance when he is in his laboratory, he does not dismiss it so lightly when he is in his own home. For, as Russell has pointed out, behaviourists do not often follow their own ideas to their logical conclusion. On one occasion an exponent of this particular school of psychology expressed to him surprise that a well-known Cambridge don had elected to marry a celebrated dancer. 'It is unreasonable to be surprised at this,' Russell replied. 'By your own showing thought is merely a movement of the larynx. This being so, the don and the dancer are members of the same acrobatic profession, although of different branches of it.'

CHAPTER VII

The Influence of Freud

THE psychology of Freud cannot be looked upon as being truly scientific, for it is derived from introspection, and not from inferences drawn from the observation of external phenomena. It suffers also from the additional disadvantage of being a product of the consulting room and the outpatients' departments of hospitals, and is therefore strictly speaking a psychopathology rather than a psychology. But Freudism has exercised such a strong influence over the thought of the earlier part of this century that it is necessary to examine it in greater detail than its intrinsic merit would seem to justify.

Pavlov and Watson, we as have seen, worked in physiological laboratories and their systems of psychology were developed along physiological lines. Freud's investigations were carried out in his consulting-room and in the out-patient departments of hospitals, and the idea of disease was never far from his mind. In the process of investigating the neurotic symptoms displayed by his patients he made the important discovery that these symptoms usually served some useful purpose; they satisfied a need in the darker or less conscious parts of the patient's mind. Because this was the case it was of the utmost importance to discover the true significance of the symptoms. Freud next made the interesting observation that when he had discovered the true meaning of the symptoms and revealed it to his patient he usually refused to accept the explanation, however convincing the evidence might be. The reason for the patient's obstinacy was that the explanation was incompatible with his more conscious ideal of himself and because of this was wounding to his *amour propre*. To account for the patients' resistance Freud postulated that there exists in everybody a psychic force which represses into the less

conscious parts of the mind all those thoughts which are incompatible with his more conscious ideals. He also came to the interesting conclusion that it was this repressing force which, when it manifested itself outwardly instead of inwardly was the actual cause of the neurotic patient's bodily symptoms. By employing a special technique of 'free association,' Freud was able to study the ideas lying in the patient's 'sub-conscious,' and by this means he often succeeded in uncovering the hidden springs which determined his more conscious thoughts and actions. His investigation of the contents of the submerged parts of the mind showed that these were of a very primitive nature, resembling the crude thoughts and emotions of infants and savages. According to Freud we are whited sepulchres and are only outwardly decent and cultured. We all carry about within us, locked in some dark cellar of the mind, not a comparatively respectable skeleton, but a full-bodied and lascivious savage. In spite of our efforts to isolate this unwelcome guest in his cellar, he rules our thoughts and actions, and at night when we are asleep he actually ascends the stairs and appears in our dreams. According to Freud, the savage is a poet and a maker of myths in his spare time, and it is he who is chiefly responsible for the folklore, mythology and poetry with which human beings beguile their tedium. But unfortunately for us the character of this occupant of the cellar is so utterly disreputable, even though he be a poet, that he is inevitably at loggerheads with that respectable figure which we contrive to present to the world. Hence the eternal conflict waged in the depths of our being, the unending tussle on the cellar stairs. Our lot is indeed a hard one, and it is not surprising that we occasionally break down under the strain.

So far there is no need to quarrel with Freud's findings, for his 'sub-conscious' has a strong resemblance to the 'voice of the devil' and to the 'lusts of the flesh' of the Puritans. We are not Puritans, but no help is needed from the analysts to discover that many of our desires have their origin in a very little-known part of ourselves, and that they are generally of

a very primitive and selfish nature. We may rationalize them and explain them to ourselves and to our friends in complimentary terms, but if we are sincere in our observations we shall often find that the explanation that we have given is not strictly accurate. We must also confess that we know very little indeed about the real contents of our minds and that the nearer we approach to all those more deeply-buried thoughts and feelings which we regard as being of an unpleasant nature, the more difficult it becomes to discover their true character. Even when we are prepared to face the worst, we find that there is a blind spot in our inwardly-turned eye on which unpleasant impressions are not registered. We are often quite incapable of seeing in ourselves the faults which other people can easily detect. Freud also made an extremely valuable contribution to psychology when he stressed the fact that our consciousness is very limited both in depth and width. Of all the ideas which exist somewhere in our minds and which theoretically might enter the field of consciousness at any given moment, only one or two are capable of doing so simultaneously. The rest must wait below in the dark until some external event, some chance association of ideas or some accidental similarity of words calls up another thought into the light. Freud's observations on consciousness were particularly noteworthy because, as we have seen, European psychologists have shown but little interest in this subject and Watson has even dismissed it as being of no importance. But it is strange that, having drawn attention to variations in consciousness, and to the three levels of the 'sub-conscious,' the 'preconscious' and the 'conscious,' Freud stopped here and ignored the possibility that there might exist higher levels than those which are known in ordinary men. Consciousness is subject to an even greater range of variations than is intelligence, ascending up a long stairway from the torpor of the plant and lower animals to the state of illumination of the seer. If the thoughts which come to us in a waking state are of greater value than those which arise in sleep, may there not be thoughts of still greater value in yet more lucid states of con-

sciousness? Freud never seems to have asked himself this all important question, and few Western psychologists have.[1]

We are not so much concerned with the correctness or incorrectness of Freud's views as with the effect which his system of psychology had on contemporary thought, and there can be no doubt that this effect was considerable. The centre of gravity of Freud's teaching was that the origin and the explanation of the more conscious events in our minds are to be found in the less conscious parts of it. Our thoughts are like bubbles of marsh gas generated below in the darkness and becoming apparent only when they rise to the surface. Since we do not know the contents of the more submerged parts of our minds and have no control over them, we are unable to choose our thoughts or to alter the nature of our instinctive desires. According to Freud, what we are, what we do, what we feel and what we think, are but the by-products of those dark and dynamic regions of the mind in which lie all our primitive instincts and impulses. This being so, reason is merely the obedient servant and apologist of these undisciplined urges, and is therefore of but little account. If I happen to disagree with the Freudian theory and to bring arguments in support of my views, these arguments are worthless. Somewhere in the dark region of my being there exists a blind, unthinking protest against Freud which I am doing my best to rationalize. I cannot express this protest as it really is, first, because I am ignorant of its true nature, and, secondly, because, even if I were aware of it, I would refuse to expose such a damaging feature to a critical world. All therefore that I am actually doing is to mislead readers concerning the nature of my real and probably infamous view of Freud.

1. Michael Roberts calls attention in *The Modern Mind* to the fact that the idea of subconscious activity was not an invention of the 19th century, but that it was used by the Cambridge Platonist Cudworth and by E. S. Dallaz. In 1866 the later wrote: 'In the dark recesses of memory, in unbidden suggestions, in trains of thought unwittingly pursued, in multiplied waves and currents all at once flashing and rushing, in dreams that cannot be laid . . . in the force of instinct . . . we have glimpses of a great tide of life ebbing and flowing, rippling and rolling and beating about where we cannot see it.'

Freud's attitude to reason provides us with an excellent example of the readiness with which a small truth becomes a falsehood when it is magnified sufficiently. There can be little doubt that much of our reasoning is only the rationalization of instinctive desires and personal prejudices. When a child who is losing a game suddenly gives up and protests that the game is a stupid one and not worth playing, or when a man drops cigarette ash on his wife's carpet and declares that this treatment is good for carpets, both of them are putting a good complexion on their instinctive behaviour. Since we are all moved by desire it is obvious that these crude forms of rationalization enter very largely into our so-called thinking. But to assert that all forms of thought, from the inductions of the scientist to the abstract thought of the philosopher, are of this primitive nature is surely a *reductio ad absurdum*.

It will be noted that Freudism implies strict psychological determinism, and this is, of course, an inevitable implication in any system of psychology which regards itself as being truly scientific. Waddington has defined science as the 'organized attempt of mankind to discover how things work as causal systems,' and as Freud, like every other physician, was trying to discover how his patients worked he was bound to discover that man's thoughts, feelings, and actions were causally determined. Not only scientists, but also many philosophers, for example Spinoza, Leibniz, Locke, Hume, Mill and Alexander, have come to the same conclusion, although some of them have sought for a loophole by means of which to escape from their own arguments. Hume, who was an exceptionally accurate observer of his own psychic processes, saw clearly that to act otherwise than he did he would have to be a different kind of person, and most people will agree with Hume. Sidgwick also noted that whatever we may think of our own behaviour we nearly always regard that of our friends as being causally determined.

> We infer generally the future actions of those whom we know from their past actions; and if our forecast turns

> out in any case to be erroneous, we do not attribute th discrepancy to the disturbing influence of free will, b to our incomplete acquaintance with their character an motives.

The followers of Freud not only regard reasoning as bein merely rationalization, but also take the view that all valu are entirely subjective.

> That which makes for mental health is right, and all th tends towards mental ill-health is wrong.[1]

For Freud, conscience is the voice of that idealized picture o ourselves which has been implanted in us by social conven tions and by the conditioning of our upbringing. It is th voice of the 'super-ego', an entirely artificial creation which generally quite out of keeping with our real nature. Since w can never alter our real nature, the only hope of attainin peace is to moderate the demands made on us by this upsta conscience and thus live more in accordance with our natura desires.

Freudism not only discounts the moral sense, but also re gards religion as being nothing but an adult recapitulation o the earlier child-parent relationship. Although he had no per sonal interest in the subject of religion, he dealt with it a considerable length in some of his books, and more particu latly in *The Future of an Illusion*. In order to understand hi attitude to religion it must be remembered that one of the most important features of his system of psychopathology wa the emphasis it placed on early upbringing. Freud was of the opinion that the great majority of psychic illnesses are the result either of psychological trauma inflicted in childhood, o else of the persistence of childish attitudes in adult life. Some patients are unable to bear the responsibilities which maturity brings with it, and in order to escape from them they retreat into the fantasies of childhood. Freud regarded those who possess a religion as examples of this escape mechanism, as

1. D. Forsyth, *Psychology and Religion*

people who had failed to outgrow the child-parent relationship. Unable to contend with the difficulties of adult life, they have sought comfort and support by creating for themselves an imaginary Heavenly Father who acts as a substitute for the parent on whom they were formerly entirely dependent. They have escaped from an intolerable situation into an imaginary world, 'made of the same stuff as the elemental creations of the infant mind.' And just as a little child talks to the imaginary people he has created and never doubts their existence, so according to Freud do religious people pray to God without realizing the infantile error they are making. Because of these resemblances between religions and those illnesses which result from the persistence of childhood attitudes into adult life, Freud has termed religion 'the universal obsessional neurosis of humanity.'

Freud was an acute observer and all his observations rest on a basis of truth, for the resemblance between certain ecstatic religious experiences and hysterical and obsessional states has long been recognized. There can be little doubt that some of the saints of the Church manifested hysterical symptoms, and these were particularly marked in the case of St Catherine of Genoa. But a resemblance between two phenomena and an identity between them are two different things. It must be remembered that whilst the intellect is the instrument of science and philosophy, the instrument of religion is the emotions. It is not surprising therefore that there should sometimes be a certain similarity in the highly emotional outbursts of an hysterical patient and the ecstasy of a highly emotional saint. Artists may also at times manifest an intensely emotional state, but because this is the case we do not look upon art as being necessarily an obsessional neurosis. Nor is the resemblance between a child's feeling for his parents and a religious man's feeling for his God surprising. What could be more natural than that a man who wishes to convey the idea of an Omnipotent and Omniscient God should avail himself of the concept of 'the father'? It was inevitable that this should happen in a Christianity originating in Judea,

a patriarchal country. But the father-image on which Freu put such emphasis is by no means an essential feature of a religions. In the more mystical branches of Mohammedanis the Divine Being is repeatedly referred to as the Beloved, an it would be as logical to regard religion as a manifestation sexuality as to explain it as being the result of the persisten of childish attitudes in adult life.

Freudism, like materialism, appeals to a great many peop by reason of its simplicity. It is not surprising therefore th it exercised a strong influence on thought during the earli part of this century, and particularly on art and education. A is a delicate instrument which, like a galvanometer, is acute sensitive to all disturbances in its neighbourhood, and the re cording-needle of art has flickered widely under the disturb ances of Freudism. The surrealists have frankly admitted th and have explicitly stated that Freudism was the source o their inspiration.

> We surrealists, wrote Salvador Dali, as you will easil see if you pay us the slightest attention, are not exactl true men of science.[1]

With this statement many of the spectators of surrealist pain ings will profoundly agree. Although many of the perpetra tors of the new forms of art were capable painters they de liberately laid aside their art in order that they might give fre expression to the contents of the then fashionable part of th mind, 'the unconscious.' Now, the 'unconscious' is the sourc of our dreams and the characteristic of a dream is the juxta position of incongruous subjects without any feeling of con tradiction being felt. This is the characteristic which the sur realists have brought out in their paintings. The title of on of Dali's pictures is a sufficient indication of their partiality fo the incongruous: 'Debris of an automobile giving birth to blind horse biting a telephone.' Herbert Read, the most abl of all the apologists of the surrealists, accords to the work o

1. *The Conquest of the Irrational*

these exhibitionists of the sub-conscious considerable importance and writes:

> to pretend that the information of unconscious mental activity which we receive in dreams, and which finds universal expression in religion, myth, folklore and ritual – to pretend that all these manifestations belong to the childhood of mankind and can be safely ignored by a rational civilization, is the supreme conceit of the human intellect.[1]

In this statement Read commits the same mistake as that of which Arthur Waley is guilty when he asserts that all religious teachings are the product of the sub-conscious. If this were true, then the Gospels, the Upanishads, and the greatest literature the world has produced would have to be regarded as being forms of art only. Dreams are entirely subjective and consequently have a significance only for the dreamer himself.[2] It may be useful as a hygienic measure for a painter to give expression to his sub-conscious, and Jung has actually employed this method of treatment in dealing with his psychopathic patients, but it is to be presumed that the function of art is not mainly therapeutic.

Freudism became a fashionable creed in the earlier years of this century and psycho-analytical terms were freely used in the conversations of intelligent and up-to-date people. In Bloomsbury and Chelsea young men and women discussed their respective complexes, fixations and sublimations, and encouraged each other to get rid of their repressions. To stifle a desire or to thwart an instinctive drive was to run the risk of injuring the whole structure of the personality, and to what purpose? Conscience was only the voice of the Super-Ego seeking to deprive the Ego of its legitimate rights, and

1. Herbert Read, *Politics of the Unpolitical*

2. I am aware of the somewhat different view of 'the subconscious' taken by Jung, but I am unable to believe that the 'collective subconscious' described by that writer is the only source of religious thought and feeling.

morality was only the thinly disguised envy of people who having themselves been starved of all pleasure, could no tolerate the sight of happiness in others. Conscience and morality therefore were regarded as being expressions o taboo. The chief aim and motive in life should be to give ful expression to the personality, to avoid repressions and to ac in conformity with natural desires. Since men were only animals endowed with a facility for rationalizing their wishes it was not surprising that these natural desires were generally found to be of a sexual nature. Farmyard love was therefore much in vogue amongst the new disciples of the Freudian gospel of living. This gospel also engendered a strong distaste for reason and encouraged the adoption of a sceptical attitude towards all accepted beliefs and authorities. Reason was merely the servant and apologist of the subconscious, and it need not be taken seriously. Psycho-analysis had also proved conclusively that there existed in man a strong desire to exercise power, and authority was therefore only an expression of the innate wish to impress one's will on other people. Reason and authority were equally suspect to the emancipated and enlightened lay followers of Freud.

The eagerness with which the post-war generation embraced Freudism was a manifestation of a reaction to the puritanical attitude to sexuality of the immediately preceding generations. As Joad has said:

> The Victorians were adepts at rationalizing their impulses; they beat their children 'for their children's good,' and made profits out of the backward peoples upon whom they believed themselves to be bestowing the boons of Christianity and civilization. They regarded this profitable process as a sacred duty, and talked of the 'white man's burden.'[1]

'The Victorians never did things because they wanted to do them, but always because it was their duty to do them. It was

1. C. E. M. Joad, *Guide to Modern Thought*

natural therefore that the men and women of the earlier decades of this century should develop a violent distaste for the hypocrisy and prudery of their parents and grand-parents. In many ways their attitude to sex was a much healthier one than that of their parents, but unfortunately the new movement went too far and swept away not only the dishonesty and the prudery of the Victorians, but also much that was useful and of value.

It is as difficult to arrive at a just estimate of Freud's work as it is difficult to give an unprejudiced account of politicians, and for the same reason; the majority of people approach these subjects emotionally rather than intellectually. Freud was a great pioneer of psychological medicine, and his contributions to the diagnosis and treatment of mental illness are so immense and so valuable that for these he will always be remembered. It is all the more to be regretted therefore that later in life he should have been tempted to embark on philosophical speculations for which by disposition and training he was but poorly equipped. Dalbiez, a keen critic but at the same time a fervent admirer of the great pioneer of psychological medicine, has expressed so clearly my own views that I cannot refrain from quoting the conclusion at which he arrives in *Psycho-analytical Method and the Doctrine of Freud*:

> Psycho-analytical investigation does not explain the philosophical aspect of philosophy, the artistic aspect of art, the scientific aspect of science, the moral aspect of morality and the religious aspect of religion. The specific nature of the spiritual values eludes the instrument of investigation which Freud's genius has created. Psychoanalysis leaves the fundamental problems of the human soul where it found them.

CHAPTER VIII

Meaning, Purpose and Intelligence

HAVING studied the scientists' account of the physical world, of the evolution of life on the earth, and of the nature of the human mind, we are now in a position to weigh the advantages and disadvantages of the scientific approach to knowledge. That a scientific method has certain advantages over other methods of reaching truth cannot be doubted, two of the greatest of these being the precision and exactitude with which it works. Using the same technique and starting from the same premises scientific workers generally reach the same result. Should the results which they have obtained be dubious they can often be confirmed or corrected by the conclusions which have been reached by researchers in other departments of science. Sir William Bragg, for example, was able to confirm the correctness of the molecular structure of certain salts arrived at from analysis and calculation by means of an X-ray examination of the minute structure of the crystals of these salts.

But the exactitude with which the scientist works is obtained by narrowing the field of the inquiry. He makes use of very limited concepts and the results which he obtains are therefore of an equally limited nature. The scientist may be likened to a man who travels along a well-marked road, looking neither to the right hand nor to the left, and without raising his eyes from the ground. All travellers by this road have been warned to listen only to the voice of the intellect, to pay no heed to the promptings of the emotions, and to avoid as much as possible the use of concepts of a psychological nature. In this way, and in this way only, does he believe that it is possible for a man to reach truth. A note of austerity can usually be detected in his voice when he describes to a layman what is called 'the scientific method', and at such

times his face is likely to assume a stern expression, such as one imagines that the face of a desert father must often have worn when admonishing his disciples to guard against the wiles of the devil. 'Believe nothing that you cannot prove,' he seems to say, 'accept nothing that you cannot measure, and, above all, turn a deaf ear to the specious words of the heart.' And as the more austere sects of Christians disapproved of all extravagances of speech and answered each other by a simple 'yes' or 'no,' so also is the scientist very guarded in his statements, confining them as much as possible to simple affirmation or negation. The scientist displays yet another quality of the puritan, namely, a scrupulous sense of honesty. In his work he is a devotee of truth, and however evasive or unreliable he may be outside of the laboratory, within it he will brook no subterfuges or falsehoods. But, let it be confessed, in the laboratory dishonesty does not pay, for dishonest work will eventually be discovered. The experimental confirmation or refutation of his results always looms ahead of the scientist, and plays for him the combined parts of the All-Seeing Eye and Puritan's Recording Angel. He dare not lie or manipulate his experiments so that they may yield the results which would confirm his own theory. Either these results are verifiable and communicable or else they are not scientific. Ethically, therefore, he is far more happily placed than is the politician. Whereas no politician is likely to be successful if he remains scrupulously honest, no scientist can hope to succeed if he is otherwise. It is not surprising therefore that as a class scientists are honest and that as a class politicians are dishonest.

We must accept the fact that the scientist can answer only a few of the questions we ask him and never the question of 'Why?' But it is this question which most nearly concerns us human beings and which from the earliest years has loomed so large in our minds. As children we were continually asking, 'What does this mean?' and 'Why is it like that?' and many of us continue to ask the same questions to the end of our days. The fact that the 'why?' is of such immense human

significance is, if anything, an embarrassment to the scienti for it is his aim to approach everything which he studies impersonally as possible. He believes that he will be able give an objective account of what he is studying only if strips himself naked of all his more obviously human qualit and predilections. He therefore dehumanizes himself so far it is possible for him to do so, and deliberately avoids maki use of those concepts, such as purpose and meaning, whi have a psychological significance. He looks upon all su terms as being descriptive of personal and therefore of su jective states, and prefers to use only those concepts which a supposed to have been derived from the objective study inanimate matter, such as the concepts of force and mass.

But although the *word* purpose has been carefully remov from the scientist's official vocabulary, it is a far more diffic matter to eliminate the *idea* of purpose from his mind. may try to look upon himself as an impersonal engineer w is discovering how a machine works, but even an engine may find that the idea of purpose obtrudes itself when starts to study the interrelation of its several parts. A 'gov nor' has been attached here *in order that* when revolutions tain a certain speed they may be automatically slowed dow good lubrication has been ensured there by means of an au matic oiling device. When for the impersonal engineer exa ining a machine we substitute a biologist scrutinizing t working of an organism, endowed like himself with the p perty of life, it becomes still more difficult to avoid maki use of the concept of purpose, for life is essentially purposef Romanes, a thoroughly sound Darwinian, wrote :

> Wherever you tackle organic nature it seems to flow w purpose,

and Darwin himself continually availed himself of the conc of purpose when describing the wonderful contrivances which the cross-fertilization of flowers is secured.

The quite legitimate refusal of the scientist to speak

purpose has led to the misconception on the part of many people that no purpose in the universe can be discovered, just as the scientist's report that it worked like a machine led to the misconception that the universe was actually a machine and only a machine. But it is not only the layman who is liable to make this error. Julian Huxley writes:

> The purpose manifested in evolution, whether in adaptation, specialization, or apparent progress, is only an apparent purpose. It is just as much a progress of blind forces as is the falling of a stone to earth or the ebb and flow of the tides. It is we who have read purpose into evolution, as earlier men projected will and emotion into inorganic phenomena like storm or earthquake.[1]

In making this statement Huxley has stepped outside the province of science, for a scientist can neither assert nor deny the existence of purpose in nature; he can only state that it is not within his terms of reference to study it. If therefore Julian Huxley assures us that there is no purpose in evolution he is expressing a purely personal and not a scientific opinion. I shall avail myself of a similar privilege to express a personal opinion of an entirely opposite nature to that of Julian Huxley.

Of the transcendental meaning of this vast universe it is impossible to speak unless we assume the existence of God. In the presence of the stars we are silent, for deep within us we know that if there is a purpose behind that majestic display, it is a purpose which our limited minds are utterly incapable of grasping. And if it be true that behind those myriads of suns there is a Supreme Reality of which they are a manifestation, this also is beyond the range of our poor human understanding. Could we who have difficulty even in comprehending our fellow creatures ever hope to fathom an Infinite Mind? 'We can know,' said St Augustine, 'what God is not, but we cannot know what He is.' Does our dog have an inkling of the thoughts or of the motives which

1. Julian Huxley, *Evolution* (1943)

determine our actions? If it did we would cease to be a g to it and would sink to the level of dog, larger and wiser, of his own flesh and bone.

But even if the mind is unable to grasp the transcenden purpose of the universe it seems likely that such a purp exists. All that we have learnt of the ordering of the exter world leads us to suppose that it forms part of a great desig That everything in the universe is integrated with every oth part of it has long been obvious to philosophers and poets, a it is now becoming obvious to scientists. According to mode physics there are no such things as pieces of isolated and se sufficient matter. In the words of Whitehead:

> The environment with its peculiarities seeps into t group agitations which we term matter, and the gro agitations extend their character to the environment.[1]

Our minds are compelled to divide the great whole into number of fragments in order to study it, but in doing so must always remember that our divisions have been made f our own convenience and are artificial rather than real. Eve thing forms an essential part of a single great pattern, or if prefer the picture of reality which was given long ago Lao-tse, everything is part of the Tao, or Way. Some m have looked upon the whole universe as being a single livi organism and others as being a thought in the mind of Go and it matters little what picture we construct for oursel provided that it contains the idea of integration and wholene

If we believe that everything in the universe is part o great design it is no longer possible to regard the appearan of life on this planet as an accident. Inevitably life on the ea must serve some purpose. Of one thing there can be no dou namely, that the earth itself has been markedly affected by t advent of life on its surface. Since its first appearance the veg tation of the earth has been utilizing the radiant energy rea ing it from the sun for the purpose of building up simple in

1. A. N. Whitehead, *Nature and Life*

complex molecules. A stupendous chemical industry has been at work converting carbon dioxide and water into carbohydrates and synthesizing nitrates into proteins. By this immense industry of plants not only have other forms of life been able to obtain nourishment, but the way has been prepared for larger enterprises all of which have profoundly affected the economy of the earth. Scientists have shown that the trees and forests which have appeared on the earth's surface have been the means of holding together the shifting soil and of thus preventing it from being washed away by the floods of winter. They are the earth's bulwark against the inroads of the desert. Serving this purpose during their lifetime the larger plants have served yet another purpose after their death. Millions of years after their decay buried forests have become part of the earth's own being and have formed the combustible black rock which we now use as coal. But it is not only the giants of life which are capable of changing the earth's surface. Invisible protozoa have made good their insignificance by their power to reproduce themselves in countless numbers and from the shells of the foraminifera have been built up the chalky hills which are known in this country as downs, and from the silica, secreted by radiolaria, have been constructed equally impressive deposits of stone. Polyps have been ceaselessly active in tropical seas, building up reefs and coral atolls, and peopling the oceans with islands. Would this planet have been the same if the so-called accident of life had never appeared on its surface? We have only to note the effect which deforestation has had on the soil and climate of certain parts of America to find the answer to this question. If life is accident, it is an accident which has had startling consequences for the planet on which it appeared.

Jeans describes life as having stumbled by accident into a universe which was clearly not designed for it. This may be true of the universe as a whole, but it is certainly not true of the planet on which we live. Some scientists are of an entirely contrary opinion to Jeans. They believe that the earth was specially prepared for life's advent. In *Design and*

Purpose Professor Wood Jones quotes passages from the works of biologists and chemists who have noted those special qualifications of the earth which render it a suitable residence for life. Paley was one of the first of the biologists to draw attention to the peculiar properties of water and to its unique suitability for the maintenance of life. This theme was developed more fully at a later date by Whewell, who gave it as his opinion that

> the various properties of water were not only suitable for the support of life, but that they were uniquely suitable. No other substance, and no conceivable substance, could have substituted water in an environment that was ultimately to support life.

In cataloguing the properties of water which rendered it uniquely fitted to life's needs, Whewell gave special prominence to its ubiquity, its rate of expansion on heating, its peculiar behaviour at temperatures below 4 degrees centigrade and the quantity of latent heat which it absorbed during the processes of thawing and evaporation. Turning then to the chemical properties of those elements out of which organisms are formed, carbon, nitrogen, hydrogen and oxygen, he showed that they and their various combinations are particularly suited to life's purposes.

Professor Lawrence Henderson of Harvard University has also examined those elements, carbon, hydrogen and oxygen, which enter largely into the chemistry of life, and has shown that their general chemical behaviour and their energy content are such as to render them pre-eminently suited to life's needs. Henderson also drew attention to the interesting fact that

> since the unique suitability of carbon dioxide depends upon alternating light and darkness, the revolution of the earth is involved in the process.[1]

1. Lawrence Henderson, *The Fitness of the Environment, an Inquiry into the Biological Significance of the Properties of Matter* (New York, 1913)

As its behaviour when freezing and melting is also among the characteristics which makes water a suitable medium for life, the larger phenomenon of alternating seasons and of the earth's revolution round the sun must also be related to the appearance of living organisms on this planet. Commenting on the observations of the various scientists from whose works he has quoted, Wood Jones[1] argues that the advent of life would inevitably seem to indicate the existence of some vast plan in which not only the properties of the various elements had their place, but also the greater phenomena of night and day and of changing seasons. It is a plan therefore which extends beyond the earth and involves in its compass at least the whole of the solar system. The fact that some of the observations on which these conclusions are based have been made by scientists who are avowedly materialistic and mechanistic in their outlook renders them all the more interesting. They cannot be dismissed like the writings of Archdeacon Paley as products of wishful thinking.

Those who have a rooted objection to teleological arguments will of course interpret these observations differently and will state that it was precisely *because* certain favourable conditions happened to exist on the earth's surface and in the solar system that life eventually appeared there. They are entitled to explain things in this way if they prefer to do so, for the manner in which we interpret a sequence of events depends on our temperament and our philosophy. We can either look forward along a chain of events and explain it in terms of cause and effect, or we can look backwards along the same line of happenings and interpret it in terms of purpose. But whilst either method is permissible, there are undoubtedly some sequences of events which lend themselves better to the backward than to the forward glance. As an illustration of this we can take the long chain of events which eventually resulted in the appearance of this book. An omniscient chemist might manage to put on record all the chemical processes, the oxidations and reductions, hydrations and dehydrations, fer-

1. Frederic Wood Jones, *Design and Purpose*

mentations and absorptions which were involved in the writing of it; a clever psychologist might enumerate all the psychic processes in compiling it and show how the various thoughts, emotions, confusions and repressions in the author's mind determined its character; an equally competent physiologist might also describe the nerve impulses, muscle contractions, reflexes and other physiological processes which occurred in the author's body while preparing his manuscript. But this method of describing the chain of events which preceded the appearance of this book would have far less meaning than the simple statement that the book was written *for the purpose* of studying the influence of certain scientific theories on contemporary thought.

Paley, Whewell and Wood Jones are not alone in preferring to interpret phenomena associated with life in terms of purpose. Kant was also of the opinion that the complex phenomena of organic nature could be described adequately only by introducing the idea of design.

> It is absurd, he wrote, for a man to conceive the idea that some day a Newton will arise who can explain the origin of a single blade of grass by natural laws which are uncontrolled by design.

Haeckel quotes these words of Kant for the purpose of showing that Kant was mistaken in believing that a scientist would never rise to explain life by means of natural laws. He proclaimed that 'the Newton of biology' had actually appeared in the person of Darwin. It is unnecessary to point out that Darwin neither explained nor attempted to explain by 'natural laws' the origin of a single blade of grass. He would certainly have repudiated Haeckel's claim that he had in any way thrown light on the nature of life or eliminated all need for thinking of it in terms of purpose.

The scientists' objection to the use of such words as purpose, meaning and intelligence is, as we have already seen, based on the fact that these terms are descriptive of subjective

psychic experiences. If, therefore, we employ these words when we describe external events we are said to be projecting our personalities on to the outer world and investing it with qualities which it does not possess. The scientist therefore begs us to keep ourselves out of the picture and to describe things as they are. But can we keep ourselves out of any picture we paint or describe anything as it really is? We must represent the universe as we experience it and we can only experience it as human beings. However objective and impersonal we may try to be, our inner thoughts and feelings inevitably find their way on to the canvas. Even the scientist who attempts to depict the universe in terms which at first sight appear to be entirely impersonal is actually projecting his own inner experiences on to his canvas. If the concept of force be traced back to its source, it will be found to have originated from the knowledge that by contracting our muscles we can bring pressure to bear on or impart movement to the objects which surround us. The idea of matter is equally the result of the subjective experiences which reach us through the sense of touch. In their origin therefore both of these terms are psychological. But although the scientist permits us to employ concepts derived from the use of muscles and of organs of touch, he sternly forbids the use of the concept of intelligence, purpose, meaning or will.

The arguments which have been brought forward to justify the use of the ideas of meaning and purpose in our descriptions of life are equally applicable to the employment of the concept of intelligence. In the *Oxford Dictionary* intelligence is defined as 'knowing how to deal with something,' and surely there could be no better description than this of a living organism's capacity to adjust itself to its environment. The higher the form of life, the more apparent is its capacity to 'deal with' its environment, in other words, the more obvious is its intelligence. Indeed, if adaptability is taken as the measure of intelligence, it would seem that some degree of intelligence must be accredited to inanimate objects, for a steel spring as well as a beast of burden has the capacity to adjust itself to

the weight which it is called upon to support. Nor is there any novelty in this idea that some degree of intelligence can be found in everything in nature. Professor Whitehead quotes the following interesting lines from the works of Francis Bacon:

> It is certain that all bodies whatsoever, though they have no sense, yet they have perception; for when one body is applied to another, there is a kind of election to embrace that which is agreeable, and to exclude or expel that which is ingrate; and whether the body be alterant or altered, evermore a perception precedeth operation; for else all bodies would be like one to another. And sometimes this perception in some kind of bodies is far more subtile than sense; so that sense is but a dull thing in comparison of it; we see a weather glass will find the least difference of the weather in heat or cold, when we find it not. And this perception is sometimes at a distance, as well as upon the touch; as when the loadstone draweth iron; or flame naphtha of Babylon, a great distance off. It is therefore a subject of a very noble inquiry to inquire of the more subtile perceptions; for it is another key to open nature, as well as the sense; and sometimes better.

In commenting on these lines of Bacon's, Whitehead expresses the opinion that they embody a more fundamental truth than did the materialistic concepts which were at the very time at which Bacon was writing his *Natural History* passing into current use amongst physicists.

If it be conceded that the universe is both intelligent and purposeful – and personally I am as convinced that this is the case as Julian Huxley is convinced that it is not the case – the universe assumes for us a very different character from that which was attributed to it by nineteenth-century physicists. We no longer have to do violence to our reason in accepting the incredible, namely, that we human beings are the sole representatives of intelligence in an automatic, lifeless and

unintelligent universe. 'Why not admit,' asked Zeno, 'that the world is a living and rational being, since it produces animate and rational entities?' Surely it is less presumptuous to admit this than to imagine that intelligence and consciousness are the unique prerogatives of man.

CHAPTER IX

The 'Creative Evolution' of Bergson

THE Darwinian theory, as we have seen, throws no light on the origin of the variations on which selection acts, and consequently provides a very incomplete and unsatisfactory account of evolution, even from the limited point of view of science. The same can be said of all the other theories which have been advanced to explain the origin of the various forms of life found on the surface of this planet, such as those of Lamarck, Buffon and Erasmus Darwin. The incompleteness of these scientific speculations need no longer surprise us. In the previous chapter it was shown that science works in a well-defined but at the same time narrow field of inquiry, and the results which it obtains are necessarily of a limited nature. But the scientific is not the only road along which a man may travel in his endeavour to reach truth, and it will be of interest to discover what the philosophers have to tell us on the subject of life on the earth.

In turning from science to philosophical literature no more convenient stepping-stone could be used than Bergson's *Creative Evolution*, for Bergson was both a scientist and a philosopher. Far from discrediting science, as some philosophers have attempted to do, Bergson believed that it gave us invaluable aid in understanding the world in which we live. But whilst recognizing the importance of the scientific method of research, he fully realized its limitations, more especially when applied to the study of living organisms. Science is the product of the intellect and its language is the language of matter. It is therefore far more at home when it discusses inanimate matter than when it is called upon to deal with living organisms. The technique which has proved of such service in physics proves no longer adequate when used in the realm

of biology. Our attempts to reach a mechanical explanation of life and to force the principles of physics upon biological problems invariably end in failure. And it is inevitable that this should be so, for the intellect is an instrument which is given to us for practical purposes, namely for focusing our attention on the material aspect of reality in order that we may take stock of it and may make those adjustments which are essential to our physical welfare. It is the tool-making faculty of man, and however far we may have progressed in its use the intellect still retains its strictly utilitarian and materialistic outlook. As Robert Boyle wrote long ago: 'True science is such knowledge as hath tendency to use.'

Bergson is of the opinion that with the help of the intellect alone we shall never be able to understand a living organism, and still less so that greater panorama of life which must be surveyed when we are studying the phenomena of evolution. But he believes that we possess another means of apprehending life, namely a psychic faculty to which he gives the name intuition. By intuition he refers to a faculty which is very different from that emotional and ill-defined psychic state to which this word is so often applied. In order to understand what he means by the word, he recommends the use of a simple psychological experiment. If we turn our attention inwards and observe life directly as it is lived, we immediately become conscious of a continuous movement driving into the future like the advancing prow of a ship. This movement of life itself, which can be observed only if all extraneous thoughts are forcibly excluded, is described by Wildon Carr as 'an intuition of reality.'[1] Now, neither Bergson nor his interpreter Wildon Carr have called attention to the interesting fact that if a man turns his attention in this way inwards and deliberately shuts out all thoughts, images and concepts, he inevitably increases his self-awareness. This being so, what Wildon Carr calls an intuition of reality is really an increase of consciousness deliberately produced by a psychological trick.

When we grow tired of this psychological experiment of

1. E. Wildon Carr, *The Philosophy of Change*

observing directly the forward surge of life and release ou minds to function as they will, what happens? Immediatel the attention is allowed to turn outwards to *think* of life an living instead of observing it, the intellect immediately pro ceeds to break up the continuous flow of existence into number of static elements. These elements are the separat states with which psychology deals, and which it catalogue under the headings of thoughts, sensations and emotions Using Bergson's well-known simile, it is as though we ha arrested the working of a cinematograph projector and b examining the film had discovered that the movement whic we had previously been watching was made up of a numbe of separate immobile views. We can, of course, study life i this way, just as can study a cinematograph film in this way but if we do so we must bear in mind that it reveals only stati and broken fragments of our subject. Actually our minds ar by nature not adapted to grasping life as it flows, and we show a strong preference for breaking up whatever we are studying into pieces and examining each piece in turn. It is only when we make the difficult effort asked of us by Bergson that for a short time we may succeed in apprehending life directly as continuous and ceaseless movement. Under ordinary con ditions life appears to us to be a procession of separate states, the present never being seen instantaneously as the present, but only being registered a moment later in the form of a re flection of something which has already entered into the past. Bergson teaches us therefore that we may study life in two different ways and that it is necessary that we should employ both methods. By using the intellect we may

> take views of life, we may go round it and note its rela tions, its varying aspects, we may frame and fit it into our scheme of an external order;

by using what he calls intuition

> we may enter into it, live its life, follow its movement from within,

in which case life appears to us not as a procession of separate states, but as 'a continuously moving zone of activity.'[1] Both these methods of studying life are complementary to each other and the knowledge derived from one does not contradict that derived from the other. Contradictions arise only when intuition 'refuses to become more precise by coming into touch with facts scientifically studied' or when the intellect makes pronouncements outside of its legitimate sphere.

Bergson looks upon reality as a ceaseless becoming, a continuous movement, not as something which changes, but as change itself. The idea that the universe is a flux of change is no new one, for it was long ago put forward by the Greek philosopher, Heraclitus. It is also to a great extent in line with modern physics in which matter is generally identified with energy, or, in other words, with change. The nineteenth-century view that the universe was made up of self-enduring pieces of matter which underwent change has now completely disappeared from science and has been replaced by the idea that it is a vast system of radiations, of 'vibratory differentiations of space-time.' There is no longer any difficulty therefore in accepting Bergson's view that reality is not something which changes, but that it is change itself. Scientists are continually being forced by new advances to alter the images with which they represent the phenomena they study. At one time light was pictured as being made up of a number of small particles travelling through space, but at a later date this idea was replaced by that of undulations travelling in a hypothetical ether. The hypothetical ether has now been abandoned and we are left with a picture of light as a movement without there being anything which moves. Similarly whenever science by its analytical methods has reached an apparent 'something', such as an atom, which is affirmed to change or move, further examination has always shown that this alleged 'something' is itself only made up of a series of changes. A modern physicist therefore finds no difficulty in accepting Bergson's view that reality in a living creative movement.

1. Wildon Carr

Bergson's philosophy is often called the philosophy of change, but it might equally well have been called the philosophy of life. For him the universe must be conceived of as being a continuous living flow which has neither beginning nor end, completeness nor finality. Life is a current passing from generation to generation, dividing and diverging, losing nothing of its force, but gaining rather in impetus as it continues its advance. To this vital surge which progressively creates the evolving universe he gives the name *élan vital*. Bergson points out that the evolution of life on this earth cannot be accounted for unless such a creative force is postulated, for otherwise it is impossible to understand why evolution has not long ago come to an end.

> A very inferior organism is as well adapted to the conditions of existence, judged by its success in maintaining its life: why, then, does life, which has succeeded in adapting itself, go on complicating itself more and more dangerously? ... Why has it gone on? Why – unless it be that there is an impulse driving it to take ever greater and greater risks towards its goal of an ever higher and higher efficiency.[1]

Life evidently started on the surface of this planet with a very humble effort, yet from the very beginning it held within it that tremendous impulse which in the end was to create innumerable higher forms of organisms. It progressed by dividing and diverging, by giving up some of its powers in order to acquire others, but always it retained something of the whole in every new form which it created. The first great bifurcation made by the creative force produced the vegetable and the animal worlds, the former tending towards immobility and unconscious torpor and the latter progressing towards mobility and consciousness. On many of the lines along which the *élan vital* flowed progress came to an end and in some directions it was forced to turn back on itself. In two

1. Henri Bergson, *Creative Evolution*

directions it progressed farthest, in the line of the vertebrates, at the end of which we stand, and in the line of the arthropods, the highest examples of which are the ants and the bees. But whilst the creative impulse has reached its furthest points in these two directions, it is only in the line of man that more progress remains possible. Man has avoided that over-specialization which characterizes the arthropods and which renders further progress in that direction impossible. Man's actions are often less effective than those of the arthropods, but they are guided by an intelligence which allows of a certain degree of choice, whereas those of the insects are bound to the iron law of instinct. In none of his bodily functions is man pre-eminent, and in this absence of extreme specialization lies man's future hope. He is neither very swift in his movements, nor very strong; he can run and he can climb and he can swim, but in all of these activities he is far behind his more highly adapted competitors. It is only in the possession of a more completely evolved brain and of a hand which allows him to contrive tools that he surpasses all other forms of life. Man is an unfinished product and is therefore capable of progressing.

By postulating the existence of an original creative impulse from which all forms of life are derived Bergson avoids the difficulty which the Darwinians experienced, of explaining how a similarly constructed eye could have been evolved in two such divergent lines of evolution as those of the mollusc and of the vertebrate. He does so by postulating that the creative impetus which drives forward in various directions is not a blind force, but is a force which carries with it both intelligence and memory. This being so, it is not surprising that similar structures have been evolved on the various lines of progress. By substituting an intelligent creative force for the blind chance of the Darwinians, Bergson explains how the various patterns of life have been evolved and how mutual adaptations between different organisms have been brought into existence. Looking at evolution through his eyes, one gets the impression that the creative force has not been work-

ing towards some clearly foreseen end, but that it has been making use rather of the method of trial and error. It is as though a vast number of tentative experiments had been in progress since the first organisms appeared on the earth, and as though innumerable forms of life and adaptations for living had been given a trial. Some of the simpler patterns of life, such as the design found in the ammonites, have proved from the first to be successful within their very limited sphere of action, and because of this have remained unaltered through long periods of time. Other experiments have quickly failed and have been ruthlessly swept aside as unsuccessful. Some organisms have achieved a certain degree of success after slight modifications have been introduced, whilst others have required more radical changes before they finally proved serviceable. It is as though the creative agency at work was not quite certain of the means by which the ultimate goal would eventually be reached, but had decided to work in a great many directions simultaneously, leaving it to the future to decide which of the models would give the best results. And of all these experiments two only have so far met with a considerable degree of success, namely the experiment which produced the hymenoptera and that which produced man. Whilst both of these lines of research have yielded good results, the first can be looked upon as being concluded, for the experiment has yielded all the results which can be expected of it. It is impossible to conceive of animals more perfectly adapted to their work than the bee and the ant, and these creatures can now be regarded as complete and standardized. But the imperfections of man are manifest even to himself and the human experiment is still proceeding. Will man with his immense capacities and his latent possibilities proceed further, or will he in the end be swept aside as an experiment which has failed? Perhaps even the creative urge which brought him into being does not know the answer to this question.

Ouspensky views the different forms of life on the earth from a similar standpoint, but substitutes for Bergson's intelligent creative force the symbolism of a Great Laboratory.

> In looking at the vegetable and animal worlds we may think that in some immense and incomprehensible laboratory of Nature there are produced one after another a series of experiments. And certain experiments, like noxious insects or poisonous snakes, appear to us as a malicious joke of Nature's at the expense of man. But gradually we begin to see a system and a definite direction in the work of the Great Laboratory. We begin to understand that the Laboratory experiments *only* with man. The task of the Laboratory is to create a 'form' evolving by itself, that is, on the condition of help and support, but with its own forces. This evolving form is man.[1]

Ouspensky regards the future of the human experiment as being no longer the responsibility of the Laboratory. Having produced a being capable of either degenerating or evolving by its own efforts, the Laboratory's work is done. It is for man to decide his own fate. In Ouspensky's words:

> ... in mankind such an evolution can only be conscious. It is only degeneration which can proceed unconsciously in man.

Bergson and Ouspensky are therefore in agreement that one of the great purposes of evolution which still remains to be fulfilled or to be frustrated is the appearance of a new and higher type of man. Bergson points out that the intelligence with which men have been endowed brings with it its own special dangers. Man and ants have both evolved their own patterns of society and both live in communities the stability of which can be safeguarded only by the sacrifice of certain individual interests for the sake of the whole. This sacrifice is ensured in the case of the ants by the inexorable workings of an instinct which brooks no denial. But the intelligence which controls man's actions cannot be relied upon, as can the instincts, to maintain the degree of selflessness which is necessary for the welfare of the society in which he lives, for intelligence,

1. P. D. Ouspensky, *A New Model of the Universe*

as we have seen, is utilitarian in its outlook and concerns itself with immediate rather than with remoter aims. A counteracting influence to the intelligence is necessary if human society is to be safeguarded. Some other faculty in man which is capable of considering the interests of others as well as the more selfish aims of the individual must intervene. Bergson believes that it is here that the faculty of intuition enters to remind man of the existence of values to which his intellect is insensitive. All men possess in some degree a feeling for spiritual values, and it is the function of religion to strengthen and develop this innate feeling so that it may exert its influence on their actions. In Bergson's opinion therefore some form of religion is essential to man's welfare.

It is only in the founders of the great world religions and in the great mystics that this more spiritual side of man is to be found *in excelsis*, and these spiritual leaders are so different from their fellows that they might well be regarded as constituting a separate species of man. They and they alone would seem to have reached that final stage in the human experiment which Bergson and Ouspensky believe to be its culminating point and its final justification. In them the attributes which chiefly distinguish men from animals, consciousness and a knowledge of spiritual values, have become fully developed. Such men have climbed to a new level of existence and spiritually are as unlike their fellows as butterflies are unlike the caterpillars from which they have evolved. Bergson is of the opinion that we can only understand the evolution of life

> if we view it as seeking for something beyond its reach, something to which the great mystic attains. If all men, if any large number of men could have soared as high as this privileged man, nature would not have stopped at the human species, for such a one is in fact more than a man.

Unfortunately the words of the world's great religious teachers are difficult to understand and in a few generations are misinterpreted. Their messages to man are therefore lost

and the religions founded on them deprived of meaning. But Bergson reminds us that although this is the case and that although much of the force of the original teaching is weakened, some power usually remains in them.

> It sometimes happens that wellnigh empty formulæ, the veriest magical incantations, contrive to summon up here and there the spirit capable of imparting substance to them. An indifferent schoolmaster, mechanically teaching a science created by men of genius, may awaken in one of his pupils the vocation he himself has never possessed, and change him unconsciously into an emulation of those great men, who are invisible and present in the message he is handing on.[1]

So it is with the messages of the world's great religious geniuses expressed in parables or in the symbolism and rituals of institutional religion. An indifferent priest mechanically reciting some ancient service or mass may unexpectedly convey to some hearer some idea of the inner meaning of these outward forms. Religious ideas are invested with a great deal of force. Hence the terrible power which they exert when religion is transformed into fanaticism and persecution.

To the devout Darwinist the idea of an intelligent creative force which moulds life to its purpose seems as great an affront to the reason as the idea of an omnipotent and omniscient personal God. Bergson's theory of creative evolution is for most scientists a flagrant example of anthropomorphic thought, of man's inveterate habit of projecting his own thoughts and feelings on to whatever be beholds. Struck by the variety and the ingenuity of the different forms of life which they see around them, men of a non-scientific turn of mind jump to the conclusion that they must have been contrived by a similar process to that which they themselves employ in their own acts of creation, namely by the activity of the intelligence. But to the scientist the forces which elaborate all the patterns of life are mindless and unseeing. They are of the same nature

1. Henri Bergson, *Morality and Religion*

as the creative Will described by the 'Spirit of the Years' in *The Dynasts* of Hardy:

> It works unceasingly, as heretofore,
> Eternal artistries in Circumstance,
> Whose patterns, wrought by rapt aesthetic rote,
> Seem in themselves Its single listless aim,
> And not Its consequence.

I have no faith in this sightless goddess Chance, pictured by Hardy, and cannot credit her with all that she is said to have accomplished by the followers of Darwin. Have the Darwinists gambled with conspicuous success at Monte Carlo that they set so great a store on pure coincidence? And what of the beauty with which the varied forms of life are clothed? Is this also the work of the blind goddess? I am sitting at this moment watching a gay convoy of teal, ducks and geese crossing the waters of the lake in Regent's Park. How perfect are the designs which each displays and with what consummate skill are their various colours blended. What is the explanation of all this beauty? I can see only three possible answers to this question. The first is that it is I who am the artist and who project on to those birds the colours and patterns in my own mind and thus invest them with a beauty that they do not actually possess. I cannot credit myself with the ability to create such a harmony of colour, shape and proportion. The second explanation is that the hues and patterns which those water-fowl display have been evolved by the slow and uncertain process of sexual selection. According to this theory, it is the birds who are the artists and who possess such consummate taste. By discriminate choosing of their mates those Chinese geese, which are gliding past me now, have produced that superb pencilling on their wings, that pale edging to each feather and the delicate tinting of their necks which awake in me such intense æsthetic pleasure. So unerring and so insistent has been their judgment that it has been able to override the blind compulsions of sex and, after many generations, to produce a work of art. I find it impos-

sible to believe that the miracle of their loveliness could have been wrought by the sexual discrimination of those geese, more especially when the scientists tell me that animals possess little or no sense of colour. But even if the geese possessed this sense, would their feeling for design be so strong as to overcome all other desires? It is not so with human artists, and Darwin himself stated that:

> In all ordinary cases the male is so eager that he will accept any female, and does not, as far as we can judge, prefer one to the other; but, as we shall hereafter see, exceptions to this rule apparently occur in some few groups.

How half-hearted is Darwin in supporting his theory that the colouring and designs of birds have been evolved by sexual selection from an original drab stock!

And it is not only the infinite variety of plumage seen in birds which has to be explained in this way, but also the jewelled splendour of the butterflies and the exquisité texture and design of flowers. Could all this have been evolved out of plainness by the action of sexual selection alone? It is true that the hymenoptera would appear to show a preference for certain colours, the wasp for yellow and the bee for blue, but it would be ridiculous to suppose that we owe all the beauty of our flower-beds to the crude colour sense of certain insects. To my way of thinking sexual selection is utterly incapable of explaining either the gay fashion display I am unexpectedly attending on the Regent's Park lake to the beauty of the early spring flowers in the beds behind me. This being so, I am compelled to accept the third and last of the three possible explanations of them, namely that the creative force which is responsible for the evolution of the innumerable forms of life on the earth is responsible also for these wonderful designs.[1]

1. In *Walden* the poet-naturalist Thoreau continually refers to the existence of 'mind' in nature. 'What a world we live in! Where are the jewellers' shops? There is nothing handsomer than a snowflake and a dewdrop. We think that the one mechanically coheres and the other simply flows together and falls, but in truth they are the product of *enthusiasm*, the children of an ecstasy, finished with the artist's utmost skill.'

It matters little whether I call the Higher Intelligence which creates all this beauty God, or apply to it Bergson's term, the *élan vital*. What matters is that I should recognize that all these wonderful patterns of life were not evolved out of nothingness by chance, but by an Intelligence which is infinitely greater than mine. Was it a poet or was it a man of religion who looked on the richness of life on the earth and called it 'the living mantle of God?' The term was not ill-chosen.

Bergson and Ouspensky are agreed that if man is destined to evolve he must evolve along the line of consciousness, but other writers on this subject give utterly discordant accounts of his hypothetical progress. Their works display the confusion which inevitably arises when writers attempt to describe the superman. In his novel, *Lost Horizon*, Hilton was unable to say anything of the supermen of the monastery at which his travellers arrived other than that they had attained a high level of culture and possessed the secret of eternal youth. Bernard Shaw likewise insists on the necessity for long life if man is to attain a higher degree of wisdom than he at present possesses. Not only do his characters in *Back to Methuselah* live to an immense age, but the speed of their development has been so much accelerated that they are endowed at birth with a capacity to speak. By the age of six they have finished with such time-consuming weaknesses as falling in love and preoccupation with art, and this being so they are able to devote themselves entirely to the business of abstract thought. Olaf Stapledon shares Shaw's view that long life is essential to full development and describes a humanity which lives two hundred thousand years, and takes two thousand years to grow up. He also depicts the failure of an earlier experiment of Nature's in which a Shaw-like race of men was produced whose intellect was developed at the expense of their emotions and their bodies.

The scientists' description of the superman is as unconvincing as that of the imaginative writers. In writing of the possible evolution of man from the standpoint of science,

J. B. S. Haldane warns us that only a comparatively few species have been successful in developing into something higher. It is unlikely therefore, in Haldane's opinion, that men will succeed in doing so unless they are prepared to pay the cost. He believes that two things are necessary if men are to develop: first, that the less intelligent among the human species should be prevented from breeding more rapidly than the more able, and, second, that the methods of improving human nature should be intensively studied and the lessons derived from this study rigorously applied. If this is done he believes that in less than a million years hence

> the average man and woman will realize all the possibilities that human life has so far shown. He will be able to think like Newton, to write like Racine, to paint like Van Eyck, to compose like Bach. He will be as incapable of hatred as St Francis, and when death comes at the end of a life, probably measured in thousands of years, he will meet it with as little fear as Captain Oates or Arnold von Winkelried.[1]

But unless man deliberately controls his own evolution as he is now learning to control that of his domestic animals and plants, he and all his works will, in Haldane's opinion, go down into darkness and oblivion. Haldane is an eminent geneticist, and it is natural that he should look upon a hypothetical superman from the standpoint of eugenics. He does not tell us, however, how the organizers of this vast human experiment will succeed in blending into a single stock the diverse and often contradictory qualities existing in such men as Newton, Racine, Van Eyck, Bach and St Francis. And if this be possible how are those individual endowments which are favourable to the evolution of a saint to be recognized and intensified by selective breeding? Sainthood is not merely the product of a favourable constitution but of effort and struggle and suffering. The truth is that man knows nothing about the subject which is of the greatest importance to him, the subject

1. J. B. S. Haldane, *The Inequality of Man*

of his own nature, and because of this he is unable to describe the lines along which it is possible for him to develop. He has no difficulty in describing a good sheep or a satisfactory ox, but he is incapable of defining the attributes of a great man. The nature of the superman eludes him. And not only does the nature of the superman elude him, but the nature of man himself. We know far more about the constitution of the atom than about the constitution of ourselves.

If a man is to develop it will be along these lines. He will attain a higher level of consciousness; he will reach a state of inner harmony instead of disharmony; he will develop a single, permanent, and controlling 'I'; he will gain will. And, as Ouspensky* has pointed out, this higher level of being cannot be reached by breeding or by accident but only by struggle and unceasing effort.

* P. D. Ouspensky. *In Search of the Miraculous*

CHAPTER X

The Religious Account of Reality

NEUTRAL to every truth which is not concerned with provable facts, science ignores whatever it is unable to submit to measurement or to statistical analysis. It is indifferent to art and religion and proceeds with its work of breaking the world into pieces and then examining each fragment. As we have seen, the scientific account of the universe throws light on its structure, but does not reveal those things which most nearly concern us as conscious and intelligent beings. The 'how' has been explained to us, but never the more urgent and insistent 'why'. Meaning and purpose are outside of the province of science and, this being so, we are compelled to turn for answers to such questions to other sources of knowledge. The scientist holds no monopoly of truth and the artist, the poet and the man of religion must also be consulted. If knowledge can be derived from the intellectual faculty of man, how much more complete will be that knowledge which is derived from all his faculties working in unison and correcting and amplifying each other's discoveries. Science is the product of one side of man's nature, and it is by no means as certain as some scientists believe that the account which it gives of the universe is less subjective and less biased than that given by other sides of man's nature.

There is a special faculty in man which, when sternly disciplined and assiduously trained, is capable of apprehending knowledge directly and not through the special senses and the working of the intellect. The West has no name for this instrument of direct cognition, and, to make matters worse, many recent writers have applied to a faculty which functions only in a state of heightened consciousness the utterly misleading term, 'the sub-conscious'. In Sanskrit there are many

words with which to describe both the instrument and the psychic experiences associated with its functioning. Amongst those terms which describe this instrument of direct cognition is the term 'bodhi', from the root 'bodh', meaning 'awakening', thus rightly implying that it functions only in states of heightened awareness. It is therefore very different from that submerged area in our being which becomes more active in sleep and is the creator of our dreams, the sub-conscious. The other names which have been used for it in the West, such as intuition, emotional understanding, and 'nous', although less misleading than the term 'the sub-conscious', are obviously inadequate, for they are often applied to psychic states which are more likely to obscure than to reveal. Not only is there a difficulty in defining this non-intellectual faculty in man, but there is equal difficulty in formulating the knowledge which it gives. Words are the currency of the intellect and, having been minted to serve its needs, they are of little use in describing experiences in which the intellect plays only a subsidiary part. Can a painter convey to one who has not experienced it what he himself feels when he sees beauty otherwise than through his painting? Can a musician put into words his own æsthetic appreciation of a Beethoven symphony? Either the listeners must themselves have known a similar stirring of the emotions, or else all attempted descriptions of music are entirely devoid of meaning. Intellectual accounts of æsthetic and religious activities are at best only external accounts of them, and to be understood they must be seen from within. Professor Ritchie has pointed out that the playing of a violin can be accurately described as the rubbing of the entrails of a dead sheep with the hairs of a dead horse, but this report would give a deaf man no knowledge of the nature of music. If for a few moments we have listened to a few bars played passably well on a penny tin whistle we will understand far more about the nature of music than if we have spent hours studying the theory of sound. So also is it with religious emotion. A man must have experienced at some time or another the direct apprehension of a spiritual reality behind

the screen of appearances, or else this whole phrase is entirely devoid of meaning to him. External descriptions of religion are of little avail.

Because of this difficulty in formulating religious and æsthetic knowledge and of bringing it into relationship with the more precise products of the intellect, there is a disposition on the part of many people to dismiss such knowledge as imaginary and false. Yet all knowledge is based on some form of experience, and since experiences of a religious and æsthetic nature are particularly vivid and convincing it is absurd to regard them as being of little or of no account. Whilst much that has previously happened to us has passed into oblivion or can be recalled only with difficulty, these moments of direct cognition stand out against the general greyness of our lives like peaks caught at dusk by the rays of a setting sun. Not only can we recall our feelings and impressions at the time, but every detail of the circumstances in which we were placed can be recaptured. This is true not only for the mystics, who have known the dazzling brilliance of the light that once shone on the road to Damascus, but also of those who have experienced the ineffable in a far lesser degree. Whatever the precise nature of the happening, and however varied the circumstances in which it came to pass, these moments of vivid living remain for ever in our memory. We were standing, perhaps, on some grassy plateau, watching the play of sunlight and shadow on the distant hills. Peace enfolded us and slowly an unaccustomed quietness began to spread throughout our whole being. The unending procession of trivial thoughts and images across the mind no longer held our attention and, freed of this distraction, and in an unaccustomed silence, we sensed the presence of an all-pervading mystery and holiness. All things had changed and we with them. It was as though we had previously been in some deep slumber and now had stirred in our sleep and looked upon a new world through half-closed eyes. It was a world shrouded in mystery, but the very recognition of this mystery was in itself a source of happiness and of a new understanding.

And in the presence of the eternal and the divine everything which before had seemed of such importance, our own interests, our own safety, our own likes and dislikes were of no account. All that we knew for certain, at that moment, was that we were in the presence of a great truth which was more real and satisfying than the half-truths which had previously distracted our attention, and that we were in the presence of holiness. There was need to worship. Then slowly and inexorably the walls of the trivial and the personal closed in on us again, shutting out the view of the other world and of that part of ourselves which merged with it. Time, which for a while had ceased to count the minutes, regained its former rhythm. Sleep descended on us and old thoughts and old dreams again troubled the mind. We were standing on a grassy plateau watching the play of light and shadow on the distant hills. Overhead were little clouds racing across the blue, and because it was cold and the mists had closed around us again, we made our way home. Yes, the mists had descended again, but we were in possession of a clear assurance that behind all these changing appearances there was a reality of which we had been given a fleeting glimpse.

It may be objected that the above is not really an account of a religious experience, but of a vivid æsthetic emotion. An orthodox Christian will point out that there is an absence in the account of all those ingredients which are vital to religion and that the emotion which has been described might have been felt by anyone whether he were a believer or not. This criticism is valid if by religion is meant the acceptance of certain doctrines, but it is not valid if by that word is meant the conviction of the existence of a spiritual reality behind all appearances and the recognition of an urgent necessity to live to the utmost of our ability in harmony with it. It is in this latter wider sense that the word 'religion' is used in this book. For what is religion? A great many definitions have been given for it, from Matthew Arnold's 'Morality touched with emotion' to Whitehead's 'What a man does with his solitariness'. Certainly it is not morality touched with emotion, for whilst

religion is linked with ethics and gives rise to a certain code of behaviour it does not spring from this. Religion is the apprehension of the Divine and the Holy, and in so far as any man loves and pursues what he recognizes as such, he may be deemed to be a religious man. Institutions, rituals, disciplines and churches are but the aids which men collectively use to help them in their pursuit of the Divine. But the end of religion is beyond all these passing forms. Stripped of all its doctrines, it is an emotional experience, the non-intellectual apprehension of another world. It is true that until the intellect has intervened and has imparted to the experience some form it cannot be called a religion, for until then no assertion has been made other than that the Divine exists. There is a gap to be bridged, therefore, between the emotional and the intellectual contents of religion, and it is in the building of this bridge that the chief difficulties are encountered and that the greatest errors are made. All that can be remembered of the experience is that it was accompanied by an utter conviction that behind all outward appearances there is a supreme spiritual reality and that the discovery brought with it a sense of joyous liberation from the limitations of individual existence and from the tyranny of personality. At the time there was no desire to explain the reason of this or to describe what was happening. It is true that the intellect, as is its habit, groped for words, but discovering that this was useless it became silent. Its momentary intervention was at the time recognized as being a dangerous distraction and as subtracting from the experience rather than adding to it. It was only afterwards that formulation seemed necessary and that the pedestrian work of interpreting our vision and of relating it to everyday knowledge was painfully undertaken.

The manner in which a man interprets the knowledge which he has gained at such moments and connects it with his ordinary thoughts is determined by the tradition and by the culture in which he has been brought up. With the help of the concepts and ideas already in his mind he seeks to give precision and outline to what is as yet without form. The Christian

identifies his experience of the Divine with God and with the historical figure of Christ, the Sufi with the presence of the Beloved, and the Platonist with those 'forms' which constitute the reality behind the veil of phenomena. As the sculptor instinctively turns to chisel and hammer and the painter to palette and brush to express beauty, so does the man who has experienced the Divine attempt to express it with the help of the concepts and ideas which are most familiar to him. But like the scupltor, he knows that with the clumsy means at his disposal he will never be able to convey to others what he has himself seen.

The objection is often brought against religious descriptions that they are grossly anthropomorphic in character. But could an account of an intimate personal relationship between the individual and a Divine Being be otherwise? In higher mystical states this relationship is so close that the division between the worshipper and the worshipped disappears, so that they become one. There are many descriptions in religious literature of this state in which the spirit realizes its identity with the Divine and is freed from its finite consciousness. A Divine Being can therefore only be described by man in those terms with which he is most familiar, namely, those terms in which he describes his own inner being.[1] If religious formulations are to be condemned for their anthropomorphism, scientific formulations must equally be condemned for their mechanomorphism, and there is no reason to believe that a description of reality in terms of machinery gives a more objective account of it than a description of it in terms of personality. Indeed, the latter is more likely to be satisfactory, for we are not describing reality as a machine views it, but reality as a man views it. We cannot strip ourselves of our humanity and as pure beings come face to face with absolute truth.

That clumsy interpreter of the emotions, the intellect, like

1. Tolstoy's reference to this may be noted. 'I address my prayers to a personal God, not because God is personal (I know that if He is illimitable He cannot be that) but because I myself am personal and limited. If I wear green spectacles I see everything green, although I know perfectly well that the world is not green.' (Tolstoy's Diary)

ambition, is liable to overleap itself, for it is a tireless elaborator of words and is often hypnotized by these. Not only does it fail to express what the intuitive faculty has felt, but it introduces into its descriptions a great deal of irrelevant matter. Intoxicated with its own cleverness and intolerant of the reticence of the non-intellectual faculty, it works with increasing speed and inaccuracy. Within a short time the simple affirmation that there exists a spiritual world which penetrates and explains the visible and tangible world is webbed round with a tangle of irrelevant ideas and arguments. The seers who know God are few, but those who know all about Him are many, and it is these who have the most to say.

Eddington has drawn attention to a certain similarity between the sense of the Divine and the sense of humour. It would be possible, he says, to make a searching analysis of humour and to classify and catalogue many of the essential ingredients of wit. If we decided to do this and submitted every funny story we heard to analytical scrutiny, we could be certain only of one thing, namely, that our method of treating humour would remove from us any inclination which we may have previously had to laugh at it. He is of the opinion that what is true of the sense of humour is also true of the sense of the Divine.

> There are some to whom the sense of a divine presence irradiating the soul is one of the most obvious things of experience. In their view a man without this sense is to be regarded as we regard a man without a sense of humour. The absence is a kind of mental deficiency. We may try to analyse the experience as we analyse humour, and construct a theology, or it may be an atheistic philosophy, which shall put into scientific form what is to be inferred from it. But let us not forget that the theology is symbolic knowledge. Whereas the experience is intimate knowledge.[1]

The analogy which Eddington has drawn is a valuable one

1. Sir A. S. Eddington, *The Nature of the Physical World*

and provides us with an excellent illustration of the difficulties and the dangers which arise when an attempt is made to give an intellectual account of a religious experience. The knowledge which has been gained is too intimate to be codified or analysed, and if an attempt is made to do this, all its essential features are likely to be lost. Intellectual discussions concerning the attributes of God are also devoid of that intimate response of the spirit which is the essence of true religion, but in spite of this there is no subject which has been submitted to more lengthy discussion. The vital essence of religion was expressed more clearly than in any theological dissertation in a text in gold and pale blue letters which once hung in my night nursery, a text which still adorns many bedrooms in West of England lodging-houses: 'God is Love'. The same vital essence of religion animated the words of Rabi'a the mystic of Basra when she prayed:

> O God, if I have loved Thee through fear of Hell, send me to Hell;
> O God, if I have loved Thee through hope of Paradise, send me not to Paradise;
> But, if I have loved Thee for Thine own Sake, withhold not from me the Eternal Beauty.

There have been learned churchmen who, in their private moments, have admitted that the love of the Divine is of more moment than the acceptance of any creed. I am indebted to a friend of the late Bishop Gore for the following story. She recalls that as a girl she was invited by the Bishop to take tea with him and to discuss with him her religious difficulties. It was with considerable trepidation that she entered the room of the learned divine and with still greater trepidation that she broached the subject of religion. After hearing what she had to say about it, he summed up his own views, emphasizing each point with the poker with which he was stirring his fire. 'Religion is love,' he said, giving the coals a vigorous poke. 'You've got to love something, God if possible, but, if need

be, anything will do.' The poker again rattled against the grate and the discussion was at an end. The Bishop had said all that was necessary for him to say on the subject.

The Easterner places far less confidence than does the Westerner in logical thought, for he believes that we are in possession of a faculty more interior than the intellect, a faculty which can sense the real in its intimate individuality and not merely in its superficial and more easily discernible aspects. This faculty provides a vision of truth and not merely a logical argument about it. In some Eastern religions so little reliance is placed on the intellect that no attempt is made to formulate the knowledge derived from the functioning of the more interior instrument of cognition. 'All forms contain an element of untruth and reality is beyond them,' wrote the great Eastern sage Sankara, and because this is the case some Indian teachers of religion assume an attitude of silence when questioned by their disciples concerning the nature of reality. But silence on this subject would be unsatisfying to a Westerner, and however difficult the task may be, an effort is always made to formulate the philosophical aspects of religion. In this process of formulation symbols, rituals and parables have been used as aids to exposition. These modes of expression are not intended to be taken literally, but as a means of reaching some understanding of the inner truths they express. But unfortunately as religions grow older rituals and symbols harden into religious creeds, their outer form being retained and their inner meaning lost. It has always been so.

Although it is true that the central truths of religion are eternal and unchanging, the means by which they are expressed must necessarily vary at different epochs and with changes in culture; the imagery employed by religion must be adjusted from time to time and brought into relationship with new advances in knowledge. An example will make this clearer. In mediæval times it was believed that heaven was in the sky and that hell lay deep underground, the gateways to it being the open mouths of the active volcanoes. Although this topographical description of the antithesis of good and

evil strikes those living in the nineteenth century as being extremely crude, it was not altogether out of keeping with the secular knowledge of an earlier time. But it would have been absurd if the Church had insisted upon retaining this primitive method of expressing a religious idea after the true nature of volcanoes had been discovered. Fortunately it has not done so, but although it no longer subscribes to a geographical heaven and hell it still regards as sacrosanct much imagery which is entirely out of harmony with current scientific knowledge.

As a result of its insistence on the sanctity of its ancient formulations, institutional religion has been on the defensive for the last two hundred years. It has been fighting a losing battle with science, abandoning one position after another as each in turn became untenable, and with every retirement it has suffered in prestige. For science, every new discovery, with its associated obligation to modify what had become an obsolete theory, has been a triumph, but for religion each new retirement has been yet another defeat. Now so long as orthodox religion remains continually on the defensive, maintaining its outmoded methods of expressing eternal truths and interpreting the cosmology and the rich symbolism of the Old Testament, it is difficult to see how it can ever exert any real influence over contemporary thought. In Whitehead's words:

> Religion will not regain its old power until it can face change in the same spirit as does science. Its principles may be eternal, but the expression of these principles requires continual development.[1]

But in my opinion it is not so much development that is necessary, but a rediscovery of the inner truths of religion. Many of the spiritual truths of religion are given in the form of parables, myths, symbols and rituals, for by such means and by such means only can knowledge of a higher order be rendered intelligible to the ordinary mind. They are the only

1. A. N. Whitehead, *Science and the Modern World*

vehicle by which esoteric truths can be transferred to men who do not possess the faculty of direct spiritual perception. And all of these means of expression are closely allied, for, as Guénon has pointed out, rituals are merely symbols which have been 'put into action.'[1] Originally all the rites and rituals of the Christian Church had a profound significance for those who used them, but as religions become old and decay the inner meaning of their rituals and symbols is lost and only their external form is retained. It is this shifting of attention from the inner meaning to the outward form which has been one of the chief causes of the Church's conflict with science. The quarrel between science and the Church has been a quarrel about symbols, an argument about modes of expression rather than about ideas.

Although the word 'religion' has been used in this chapter in a sense which some people will regard as being illegitimate, it must not be so loosely employed that it loses all its meaning, as in some of Julian Huxley's writings. This author expresses the view that

> religion is an important higher function of man, a way of life which follows necessarily from a man holding certain things in reverence.[2]

He then indicates what he means by the word religion.

> In that new religion man must make up his mind to take upon himself his full burden by acknowledging that he is the highest entity of which he has any knowledge, that his values are the only basis for any categorical imperative, and that he must work out both his own salvation and destiny and the standards on which they are based. To put off this burden on to the shoulders of an imaginary God is to shrink from full responsibility, and to hinder man from arriving at his full stature.

1. René Guénon, *La Voile d'Isis*
2. Julian Huxley, *Religion without Revelation*

To call the rather arrogant ritual of mental hygiene recommended by this writer religion seems to me to deprive the word of all its essential meaning. Moreover, Huxley is inconsistent. In one passage he suggests that man's values are entirely subjective and in another he counsels us to 'proceed in part by faith – faith not only in the validity of our own capacity of making judgments, but also in the existence of certain outer realities, pre-eminently moral and spiritual realities.' What, we may well ask, are these moral and spiritual *outer* realities if man's values are entirely human? It would seem that even humanists find it difficult to live by humanism alone, for, as Radhakrishnan has said, 'When the humanist admits the ultimateness of values, he is implicitly accepting the spiritual view of the universe'[1]

A number of different explanations have been offered of the decline of religion in the West, but there are some who are of the opinion that no explanation is necessary. For those who hold this view, the disappearance of religion marks a certain stage in the evolution of humanity. As a youth who has arrived at maturity removes the fairy story books from his bookshelf, so also is it suggested that when men reach a certain level of culture they automatically discard their beliefs in the supernatural. According to this theory our religions are survivals of a primitive method of explaining natural phenomena in terms of good and evil spirits. With the discovery of electricity a thunderstorm ceases to be the wrathful fulminations of a god and becomes a cloud heavily charged with electricity. As Frazer has so aptly put it:

> From one department of nature after another the gods are reluctantly or contemptuously dismissed and their provinces committed to the care of certain abstract ideas, of ethers, atoms, molecules and so forth, which, though just as imperceptible to human senses as their predecessors, are judged by prevailing opinion to discharge their duties with regularity and despatch, and are accordingly

1. Radhakrishnan, *An Idealist View of Life*

> firmly installed on the vacant thrones amid the general applause of the more enlightened portion of mankind.[1]

God is man's great ideal, and as long as he has ideals he is likely to personify them in the form of a Personal God. Blake expressed the same thought when he wrote that 'all deities reside in the human breast.' The limitations of thought are such that man is forced to create his God in his own image; it is inevitable therefore that the Deity should receive the imprint of the hearts which have moulded Him. Modern man is as much in need of a religion as were his primitive and unscientific ancestors, and it is extremely doubtful whether his need will ever be outgrown. The routine of life, the business of living, hypnotizes and enthrals us so that we are oblivious to everything else, but from time to time, under the stars at night, at the sight of some great natural beauty, or sometimes even amidst commonplace surroundings, we momentarily awake, and the feeling that we are in the presence of a great mystery sweeps over us, bringing with it a mood of deepest worship. What is this strange feeling which thus disturbs the settled routine of living? Either it is due to some innate twist in the human mind which bears no relationship to anything real and serves no biological purpose, or else it is an intimation of a spiritual reality surrounding us. The fact that the spiritual experiences do not tend to disappear but rather to deepen and become more frequent as the mind develops does not suggest that they are hallucinations. The fact that these sublime realizations have come to highly educated men, to great philosophers and scientists, does not suggest that they are the outcome of ignorant superstition.

It is a noteworthy fact that the intensive anti-religious propaganda which was carried out with scientific thoroughness in Russia failed in its purpose to free men of their religion. In the end it was not religion which was killed there, but the anti-religious propaganda. Perhaps even more striking is the observation that the very opponents of religion have been

1. Sir James Frazer, *The Belief in Immortality*

forced to create for themselves a new variety of faith in plac of that which they have lost; their irreligion itself takes o many of the attributes of religion. A number of examples o this could be given. No school of psychology has ever show more antagonism to orthodox belief than the Freudian schoo yet the followers of Freud became the priests of their ow cult. In case this should appear to be a prejudiced commen on the post-Freudians, the following paragraph from a well known textbook on psychology is appended.

> It (Freudism) has come to resemble a cult more than scientific doctrine. It has its canonical literature, its apo crypha, its inquisitors and its apostolic succession. Ortho dox psycho-analysts are compelled to submit their wil and reason to as stern a discipline as any member of Religious Order. Thus it comes about that pyscho analysts inhabit a little world of their own that is apt t be quite out of touch with systems of thought which ar foreign to them.[1]

That some variety of faith is essential to those living in sceptical age is amply demonstrated by the vigorous growth of new varieties of religion and religion-substitutes outside o the churches. The primal desire in man for a positive belie continues to assert itself and drives those who are unable t accept Christian doctrines to seek some form of faith in the most unlikely places. Novel cults spring up and die down and numerous movements are started, lose direction and come to a stop. Never was it easier for anyone with a striking per sonality and a few high-sounding phrases to collect round him a circle of adherents, for at the present moment there would appear to be a veritable hunger for 'messiahs.' Substi tutes for religion are to be found everywhere, many of them sentimental and harmless, but some of them explosive and

1. E. B. Strauss, Preface: *Psycho-Analytical Method and the Doctrine of Freud.* Trans. Dalbiez

dangerous. So numerous are these varieties of ersatz religion that it would be impossible to review them all. The three religion-substitutes which have had the strongest influence on contemporary thought need only be studied. These are the worship of humanity and of the race and the political ideal known as communism.

CHAPTER XI

The Worship of Humanity

HUMANISM is the oldest, the most rational and the most satisfactory of all the religion-substitutes. It is the philosophy of life to which men naturally turn when faith is on the decline, and it might almost be said that humanism varies inversely with the prevalence of religion. Confucius believed that the greatest good that men could achieve was to bring about a well-balanced system of human relationships, and he may be counted therefore amongst the humanists. This great Chinese intellectual is said to have had such an intense admiration for Lao-tze that he made a special journey to meet him, but he was unable to understand the Taoist's mystical attitude to life and returned home to continue his work as a humanist. Plato, who lived in an age somewhat resembling our own, an age in which the scientific philosophers were attacking the more ancient beliefs, was also an exponent of humanism, but of a humanism which was linked up with a spiritual form of philosophy with so many of the characteristics of a religion that it is doubtful whether he should be numbered amongst the world's great humanists. Aristotle was certainly more of a humanist than was Plato and the moral code he laid down resembles that of Confucius; it was the code of a gentleman. He taught that virtue brought happiness and that virtue was the mean between two extremes; courage lay between foolhardiness and cowardice, temperance between incontinence and total abstinence, modesty between boastfulness and shyness. So moderate was Aristotle that he was accused by one of his critics of being moderate in excess.

Humanism provides men with a carefully reasoned, balanced and, on the whole, with an efficient philosophy of life, and because of this it appeals particularly to intellectuals and

scientists. But on more critical examination it is seen to suffer from certain drawbacks, and to contain certain inconsistencies. Aristotle is one of the few humanists who has admitted the difficulties which an acceptance of the rule of the golden mean brings with it.

> For in each case it is difficult to find the mean ... thus it is easy and within all men's power to be angry and to give and to spend money; but to determine the person to whom, and the quantity and the time, and the motive and the manner, is no longer in every man's power, nor is it easy.

No ethical code which is based on human opinion alone can command an unhesitating and uncritical obedience, and because of this humanist morality is subjected to an immense strain. Its standards are recognized as being only human standards, and therefore tentative and fallible. Those who accept these standards accept them merely as convenient rules for the general guidance of conduct. Yet the behaviour of some humanists at critical periods of their lives has not been consistent with the view that all values are only human values. Socrates might easily have avoided the fate which his temerity in offending the Athenian authorities had brought on him by acccepting his friends' help and escaping from Athens, but he felt instead that it was incumbent on him to remain and to drink the hemlock. For him values were not merely empirical creations of the human mind, but ultimate truths for the sake of which he was prepared to lay down his own life. Those humanists therefore who, like Socrates, admit the ultimateness of values are implicitly recognizing the spiritual reality behind the universe. In the words of religion, they are recognizing the existence of God.

Kant realized that a morality based only on public opinion and devoid of divine sanctions was comparatively ineffective, and he maintained that although the existence of God could never be demonstrated, a belief in a Divine Being was essential to morality. He was also of the opinion that it is through our

ethical consciousness that we are best able to discover that God is, for if we do not accept His existence, we have to accept also a dualism between a moral law which we seek to follow and a universe which is apparently hostile to it.

In spite of all its defects and of all its weaknesses, the modern world owes much to humanism, and it must indeed be frankly admitted that during the last hundred years the humanists have worked as hard, and sometimes even harder, to mitigate the sufferings of humanity as have the representatives of orthodox religion. Belief in the existence of God has been disappearing, but man's feeling of pity for his fellows has survived. This is perhaps surprising when we remember that science, which has to a great extent supplanted religion in the modern man's mind, puts emphasis on strength and efficiency rather than on sympathy for the frail and ineffectual. Men are rarely consistent, and it would seem that although we have accepted the doctrine of the survival of the fittest intellectually, emotionally we have rejected most of its implications. Because of this inconsistency compassion has been more successful than have some of the other virtues in avoiding the eroding action of science.

A philosophy of life which makes man its centre is of necessity weaker than one which makes God its centre, and although humanism has succeeded in mitigating the difficulties resulting from the decay of religion, it has been unable to eliminate them. This has not been for want of suggestions on the part of the humanists, for, as Macneile Dixon reminds us, the doctrine of the 'perfectibility of the world' is a very ancient one and has had many vigorous exponents. There are, for example, those reformers who believe that all human evils when traced to their source will be found to be economic in origin. They assure us that if people are given adequate houses, food, vacuum-cleaners, dish-washing machines and leisure the world's ills will be cured. But when asked what the people will do with their leisure and how they will order themselves after they have been housed, fed and provided with all the necessary labour-saving devices, they can give no answer.

Others amongst these 'Projectors and Schematists,' as Swift called them, pin their faith to the framing of new laws and regulations; society is to be safeguarded by legislation and by the drawing up of a list of rules so sweetly reasonable that everybody will accept them and be willing to obey them. Sir Walter Scott once complained that:

> The Whigs will live and die in the heresy that the world is ruled by little pamphlets and speeches and that if you can sufficiently demonstrate that a line of conduct is most consistent with men's interest you have therefore and thereby demonstrated that they will at length, after a few speeches on the subject, adopt that course.

It is not only the Whigs who will live and die in this heresy, but also many modern reformers. Even if the moralists could agree on one system of morality – and this agreement has not yet been reached and will never be reached – it is very doubtful whether they would find men and women who were willing to inhabit the pale world they had created. 'If we hope to save the world by lowering its vitality we have in nature a formidable antagonist,' writes Macneile Dixon, and the new world created by the imagination of moralists is one in which full-blooded men and women would find it difficult to live. What sort of a world would be built for us if the various ethical societies, the watch committees, vigilance councils and Lord's Day Observance Societies, the committees for the prevention of this or the promotion of that could have their way? The imagination boggles in its attempt to visualize it. Moreover, what sort of incentive would be offered to us for obeying the various enactments laid down by the moralists? The decay of religion and its sanctions make it vital to find some other support for ethics, for unless virtue can be made the object of personal desire, the pursuit of which is as urgent and compelling as the scientist's pursuit of truth and the artist's pursuit of beauty, there is little incentive to be moral. 'To preach morality is easy,' wrote Schopenhauer, 'to find a foundation

for morality is hard,' and a morality built on no foundation is as insecure as a house built on sand.

H. G. Wells gives his own scientific version of humanism in *The Conquest of Time*. His humanism is of the economic type, and he believes that our difficulties will be solved by a better organization of society, by a fairer distribution of this world's goods, by improvements in housing, medicine and education and with the help of all those scientific discoveries which have the effect of raising the general level of living. But Wells sees clearly that some form of religion will be necessary to act as a cement for the new building he proposes to erect. He writes:

> The teaching of history is strictly in accordance with the teaching of Buddha. There is no peace in happiness, no righteous leadership or kingship unless men lose themselves in something greater than themselves. The study of biological progress again records exactly the same process; the merging of the narrow globe of the individual experience in a wider being. To forget oneself is to escape from prison.[1]

He formulates his faith in the following words:

> The creed of the new religion which is destined to bind a regenerate world together is clear and simple. It demands the subordination of the self, of the aggressive personality, to the common creative task, which is the conquest and animation of the universe by life. The new religion soothes the innate fears and restrains the natural egotism of the young. It repudiates the idea of Sin and the idea of Personal Immortality; which are both in their several ways begotten by Fear. It denies the existence of an anthropomorphic God (Peccavi), and it cannot afford to recognize any prevaricating use of the word 'God.' That word implies a Personality or it implies nothing.
> The new religion maintains that the frame and whole object of life is the progressive conquest of hunger and

1. H. G. Wells, *Outline of History*

> thirst, of climate, of substance, of mechanical power, of bodily and mental pain, of space and distance, of time, of things that have seemed lost in the past and of things possible in the future. Continually the species will extend itself throughout a constantly ampler and more consciously living universe.

Unfortunately, Wells does not explain what he means by humanity extending itself through a 'more consciously living universe.' The religion of 'new man', like the older religions, has its mysteries. But if Wells withholds from us the innermost secrets of the new religion he compensates for this by giving us an excellent account of the relationship which exists between the individual and the species, an account which is well worth studying.

After disclaiming any sympathy with those extremists who want to subordinate entirely either the interests of the individual to the race or the interests of the race to the individual, he makes clear to us that the relationship of the individual to its own race is a very special one, differing markedly from the relationship which exists between one species and another. The species lives and dies in its individuals, each of whom contributes to and each of which determines to a very small degree the character of the agglomerate mass to which it belongs. It is necessary to be clear what is meant by this. We are accustomed to picture the founder of a family as the trunk of a tree from whom descendants spread out in continuously bifurcating branches, but this analogy is a misleading one unless we visualize at the same time the ramifications of the roots from which the tree has grown. Few of us realize the multitude of our ancestors. Each of us has two parents, four grandparents, eight great-grandparents, sixteen great-great-grandparents, and so on, and when we take into account this two-four-eight-sixteen ratio, it becomes clear to us that the blood of any foreigner who happened to have immigrated to Great Britain prior to the Norman Conquest is almost certainly running in every modern Englishman's veins. This

being so, there can be no such thing as a pure race, for a race rapidly absorbs and assimilates all the foreign elements which enter into it. As Wells has put it, 'the world of Julius Cæsar was ancestral to ours en bloc;' we are Romans as well as being Britons, Danes, Saxons and Normans. The figure or symbol which best represents a race or species is not a tree but an interminable network, or, as Wells has pictured it, a loofah. An individual may be likened to a single fibre of the loofah which emerges from and then returns into the whole so as to modify it to a small degree. Because no individual man is identical with his fellows, each man contributes some new potentiality to the stock from which he has sprung and with which he again merges. Whether this new potentiality will be accepted and developed or rejected by the stock will depend, according to the Darwinists, on whether it has survival value. Should it not possess this it will be rapidly eliminated, and biological research has shown that it is the fate of the great majority of mutations to be promptly eliminated. Only a few of the individual's special characteristics prove really serviceable and are perpetuated in the species.

Every man brings to the species of *Homo sapiens* some donation which may be looked upon as providing material for a new biological experiment. The species put this contribution to the test and either accepts it or rejects it. It is obvious that a man has more than a physical contribution to offer, for he has developed his mind and can bring to his fellow creatures novelties of the mind as well as of the body. He can contribute, for example, some new invention or a fresh scheme for the organization of human society. As in the case of physical features, some of these mental contributions are accepted, some are rejected, and yet others are accepted and later found to be disastrous and consequently in need of quick elimination. Unfortunately we have many modern examples of this type of contribution to the human species. During the last few decades new social organizations and methods of government have been evolved by certain outstanding individuals and their social and political contributions to the human species

have brought such disaster in their train that unless they are promptly rejected humanity will be destroyed.

Wells has called this biological version of humanism the 'new religion', thereby implying that it is a satisfactory substitute for the older faiths. Many 'new religions' have been devised in the past. The Bible records that when Moses was lost to the Israelites on the heights of Sinai they approached Aaron and said:

> Up, make us gods that shall go before us; for as for this Moses, the man that brought us up out of the land of Egypt, we wot not what is become of him.

Wells, like Aaron, realizes that men cannot contrive to live without some form of belief and has therefore offered them a tangible object to worship in the shape of the 'new man.' He looks forward to the coming of a new type of human being, 'a new species of self-conscious animal'. There is even a certain mystical element in the biological religion of Wells, as there may well have been in that of the golden calf offered by Aaron to the Israelites. As worshippers of God lose their identity in the Divine Being, so in Wells' religion do individual men lose their separateness in a greater human being They merge with a collective human organism

> ... whose knowledge and memory will be all science and history, which will synthesize the pervading will to live and reproduce into a collective purpose of continuation and growth ... At the end of our vista of the progressive mental development of mankind stands the promise of Man consciously controlling his own destinies and the destinies of all life upon this planet.[1]

It is in this sense that Wells interprets the words:

> He who would find his life shall lose it, and he who would lose his life shall find it.[2]

1. *The Science of Life* 2. Matt. x., 39.

It will be seen that Wells, like Bergson and Ouspensky, looks upon the purpose of evolution as being the creation of a new type of man, but there is a fundamental difference between his outlook and theirs. For Bergson and Ouspensky, the new man is an individual who by special effort has become all that a man can become. For Wells, he is a member of a new race, brought into being automatically by the contributions of myriads of ancestors. With the promise of the advent of this new type of humanity it seems that we, the forerunners of it, must remain content. We are in difficulties, but later these difficulties will be resolved; we are hungry, but after we have contributed our tiny mite to the future and died, there will be feasting and drinking; we are in darkness, but those who come after us will have light. There is little sustenance in this creed for those who are being overwhelmed by present difficulties and are eagerly seeking for some light to guide their footsteps. It is unlikely that it will prove more satisfying to men and women than the older varieties of humanism sponsored by Confucius and Plato. Few people will be able to make a satisfactory religion out of the worship of humanity.

CHAPTER XII

The Worship of the Race

SCIENTISTS are spendthrift with time and, as we have seen, are prepared to grant millions of years for the evolution of new genera and species. So also are they willing to allow all the years that may be necessary for the coming into being of a new type of humanity by the method described by Wells. They can afford to do so, for men appeared but yesterday in the great time-scale of the earth and humanity is therefore very young. But all men are not as content as Wells and the scientists appear to be to live and labour for the advent of an 'afterman' in some far distant epoch. There are those who would hasten the advent of a new order on earth and who believe that it can be hastened. According to them, all our ills are to be cured not by the slow evolution of a higher type of humanity, but by the intensive cultivation and exaltation of a particular race of men. For the worship of humanity they have substituted the worship of the super-race.

The idea of the 'chosen people' has been reintroduced in this particular epoch of the world's history with new scientific furbishings and with a babble of propaganda. The future is for the biologically elect and the biologically elect are not unnaturally that race to which the exponent of race-worship happens to belong. This belief, which doubtlessly existed long before Joshua led the 'chosen people' into Palestine and detroyed its cities and its people 'until he had left him none remaining', has reappeared periodically throughout the ages. The idea that some races are by nature inferior has indeed always been popular. We find, for example, Cicero declaiming:

> Do not obtain your slaves from Britain because they are so stupid and so utterly incapable of being taught that they are not fit to form part of the household of Athens.

The idea that some people have been so favoured by nature as to constitute a natural master-race is much in evidence at the present moment, particularly in Germany.[1]

It is interesting that although Hitler went to the trouble of engaging Nazi scientists to collect support for that old version of the idea of the master-race, the Nordic legend, he himself was not deceived by their so-called discoveries. Rauschning reports that the Fuhrer said to him:

> I know perfectly well, just as well as all these tremendously clever intellectuals, that in the scientific sense there is no such thing as race. But you, as a farmer and cattle-breeder, cannot get your breeding successfully achieved without the conception of race. And I as a politician need a conception which enables the order which has hitherto existed on historic bases to be abolished and an entirely new and anti-historic order enforced and given an intellectual basis ... I have to liberate the world from dependence on its historic past ... And for this purpose the conception of race serves me well.[2]

Wickham Steed is of the opinion that the real originator of the Nordic legend was not a German, but a French diplomatist and man of letters, named Comte Alexandre de Gobineau, who in the 'fifties of the last century published a book entitled *The Inequality of Human Races*. His theme was later explained by Houston Chamberlain, from whose writings Hitler has undoubtedly obtained many ideas which have been of considerable service to him. It was from Houston Chamberlain's work, *The Foundations of the Nineteenth Century*, that he and Goebbels obtained their authoritative description of the Nordic man born to inherit the earth.

> The great radiant heavenly eyes, the golden hair, the symmetrical muscular development, the lengthened skull which an ever active brain, tortured by longing, had changed from the round lines of animal contentedness

1. This book was written in 1943
2. Quoted from *The Mind and Face of Nazi Germany*. N. Gangulee

> and extended towards the front, the lofty countenance required by an elevated spiritual life as the seat of its experiences . . .

So runs the official account of the Nordic man who has been specially shaped by destiny in order that he may inherit the earth.

With the help of his well-disciplined scholars – and, as Porson has said, 'German scholars dive deeper and come up muddier than any others' – Hitler has produced an up-to-date scientific rendering of the Messianic mission of the superior German-Nordic race. He has been helped by his scholars, but he has been given even greater help in the successful dissemination of the pseudo-doctrine by the character of the German people. Goethe, Heine and Nietzsche have all drawn attention to the susceptibility of Germany to mass hypnosis owing to its lack of any homogeneous culture. Goethe said to Eckermann:

> We Germans are of yesterday. No doubt in the last hundred years we have been cultivating ourselves quite diligently, but it may take a few centuries yet before our countrymen have absorbed sufficient intellect and higher culture for it to be said of them that it is a long time since they were barbarians.

Heine was still more critical of German culture and was fully aware of the superficial nature of German civilization. He wrote with what is now seen to have been prophetic insight:

> Christianity has occasionally calmed the brutal German lust for battle, but it cannot destroy that savage ecstasy ... When once that restraining talisman, the Cross, is broken ... the old stone gods will leap to life among forgotten ruins, and Thor at last will crash down his mighty hammer on the Gothic cathedrals.

It should be noted also that Nietzsche was as emphatic as Goethe and Heine on the subject of the German lack of cul-

ture, but his countrymen misread his account of the Superman and came to the conclusion that he was justifying the character of the typical Prussian. They utilized therefore those of Nietzsche's ideas which were useful to them and discounted all his criticisms.

Although the most frightening example of the worship of the race is provided by modern Germany, race-worship is by no means confined to that country. Japan has also revived for militarist purposes an ancient tradition and placed it in a new scientific setting. Amaterasu O Mihami, the 'Divine Ancestress' of the Emperor of Japan, by virtue of whose mandate he rules, gave to her descendants the express command that they should govern the whole world. The new movement in Japan is indeed a modern version of the ancient Tokugawa Shogunate which once possessed its secret police, its *élite* guards and its summary courts for the rigid suppression of all 'dangerous thought.' There is indeed very little that is entirely new in the method of the leaders of modern Germany and Japan.

When modern dictators and politicians revive old ideas and seek for new evidence in support of them, they do not scan the Bible, but open the text-books of science, for they know what will carry most weight with their people. Two scientific theories are to be found in these text-books which are of particular service to the promoters of race-worship. The first of these is Weismann's theory that characteristics acquired by the parents are never transmitted to their offspring, together with its useful corollary that the environment in which a stock is brought up is to be looked upon as being of little importance as compared with its genetic constitution. Interpreted in terms of humanity, this means that attempts to improve the conditions under which men live will be of little avail if the racé that enjoys this improvement happens to be of inferior stock. What a rich find is this for those who believe that they belong to the biologically elect! Professor Wood Jones has dealt stimulatingly with this subject in *Habit and Heritage*. He points out that as pseudo-science has grafted on to the theory

of the survival of the fittest the implication that the fittest are those most red in tooth and claw, so has pseudo-science translated the theory of the non-inheritance of acquired characters into a doctrine of racialism which is

> more cruel, more destructive of hopes of human betterment and of the attainment of international amenities, than any of the other bastard slogan teachings of our time.

It will be useful to make a cursory examination of the scientific doctrine on which such reliance has been placed by race worshippers, even although to do so is a diversion from our main subject. It has been stated in Chapter IV that Weismann derived his theory from the observation that at a very early period in its development the embryo separates into two parts, somatic and germinal. He believed that the separation was so complete that the germinal epithelium, which is eventually responsible for the propagation of a new individual, was completely insulated from all changes occurring elsewhere in the body. It was impossible therefore for any characteristic acquired by the body to pass via the germ cell to the offspring. If one refers to Weismann's own writings, one finds that, like Darwin, he was far less extreme in his views than were those who followed him. Weismann admitted that it was conceivable, although unlikely, that germ cells received some slight imprint from changes occurring elsewhere in the body. From their own unskilled observations most ordinary men would say that it is probable that acquired characters are inherited, and before the time of Weismann, not only laymen, but the majority of scientists, were of this opinion. Spencer was so strongly in favour of inheritance that he wrote:

> ... either there has been inheritance of acquired characters, or there has been no evolution.[1]

The theories of evolution which preceded that of Charles

1. Herbert Spencer, *Principles of Biology*

Darwin, such as those advocated by Lamarck, Buffon and Erasmus Darwin, also accepted the view that characters acquired by the parents could be transmitted to the offspring. Even Charles Darwin regarded this as being an important factor in the production of new species. The evidence which supports Weismann's view must therefore be very weighty if it is to be sufficient to justify a complete reversal of all previous ideas.

Before examining the evidence which Weismann brought forward in support of his thesis, it is necessary to be clear as to what precisely is meant by an acquired characteristic. This may be defined as a structural change in the body of a multicellular organism which is induced during its lifetime and is of such a character that it persists after the factors which have been responsible for its appearance have ceased to operate. Unicellular organisms are excluded from this definition because Weismann's theory demands a division of the body into somatic and germinal components, and in the unicellular organism this division obviously does not exist. It will be noted also that the change is stated to be induced in the body, in other words, slowly developed in it as the result of the action of environment on it, or of the use or disuse of parts. It is difficult therefore to understand why so much time has been wasted by the upholders of Weismannism or experiments and observations showing the non-inheritance of mutilations. Weismann himself sought proof for his biological theory by breeding large numbers of rats whose tails he cut off at birth, and because he never succeeded in finding a rat born without a tail, or with any other malformation that could be attributed to his interference with the parents, he felt justified in maintaining that acquired changes in the parents were never transmitted to the offspring. Equally irrelevant observations have been made by other observers. The fact that Jews still continue to be born with foreskins, and that the women of savage tribes who maltreat their noses, ears and lips, still bear normal children, is of no consequence. The point at issue is not whether artificial mutilations are transmitted, but whether

characters *induced* by the use or disuse of parts, or by the action of environment on structure, eventually become a part of the genetic constitution.

Weismann's final argument in favour of his theory, namely, that the removal of the reproductive organs produces sterility and therefore proves that no other cells of the body are capable of becoming germ cells, may also be disputed. A great many experiments have been carried out on such animals as guinea-pigs, rabbits and mice, which seem to indicate that after the removal of the ovaries new ovaries may be produced by the body. Instances of a similar event having occurred in women have also been reported. Because in operating on human beings it is not always possible to adopt all the safeguards which are taken in a laboratory against inadvertently leaving some tiny portion of the ovary behind, the correctness of these observations on human beings must be considered doubtful. But the results of the more carefully controlled animal experiments cannot all be explained away, and if germ cells may arise *de novo* from the somatic cells in the body – as they apparently sometimes may – it is an indication that they do not possess that developmental and physiological isolation from the body cells which Weismann's theory demands.

It must be remembered that if acquired characteristics are inherited their incorporation into the genetic constitution must of necessity be a very slow process. It is therefore extremely unlikely that the inheritance of acquired characters will ever be demonstrated by breeding experiments, or by direct observation. If positive evidence of the inheritance of acquired characteristics is to be found, it will have to be found in nature, for nature has unlimited time at its disposal. In *Habit and Heritage* Professor Wood Jones has collected some striking examples of what appear to be the inheritance of acquired characters.

The simplest example of this is provided by the 'squatting facets' found on the ankle bones of Punjabis. The Punjabis spend much of their time in a sitting position which necessitates a marked flexion of the ankles. As a result of the tibia

being pressed down on to the astragalus what is known as 'squatting facets' are formed on the pressure points of both these bones. Since these facets are found only on the bones of the Asiatic races which habitually adopt 'the hunkered position' of rest, they may be regarded as being acquired characters in the true sense of the term. What is of significance is that while no facets are ever found on the bones of the new-born children of chair-users, they are invariably found on those of the babies of squatters at least a month before they are due to be born.[1]

The doctrine of the non-inheritance of acquired characters has been examined so far from the point of view of racialism, but it is of great importance also to those concerned with educational and social problems. For a great many years there has existed a controversy about the comparative importance of nature and of environment in the upbringing of children. At one extreme are the more fanatical of Weismann's followers who proclaim that environment is of little importance and at the other are equally prejudiced behaviourists asserting that nothing else matters. If neither good nor bad acquired characters are ever transmitted to the offspring, then the science of eugenics becomes of paramount importance and efforts to improve life conditions of those with a poor inheritance are likely to be of little avail. Nature would then be of far greater importance than nurture. Animal experiments have been carried out in the hope that they will throw light on this particular aspect of the problem of the inheritability or the non-inheritability of acquired characters and more especially on the subject of the inheritability of alcoholism. The results of these experiments are contradictory. Pearl, for example, made fowls daily drunk and found that the average vigour and weight of the chickens obtained from them were improved whilst Stockard, using guinea-pigs for the same purpose, found a great number of monstrosities among their offspring. But we are left uncertain in the end whether man is more allied to the fowl or to the guinea-pig and these

1. Havelock Charles, *Journal Anat. and Physiology*. Vol. 28

experiments therefore throw very little light on this important problem.

The second argument in support of their political creed which the worshippers of the race have derived from science is that as multicellular organisms are higher in the biological scale than unicellular organisms, so also is the agglomeration of men which form the nation of a higher order than the individual. It is the individual therefore that must be sacrificed in the interests of the nation, and not the nation in the interests of the individual. This comparison of the individual with a cell in a multicellular organism is merely a modern scientific rendering of the much older analogy used by Hobbes, who pictured society as a greater man whose activities are controlled by a brain in the form of a sceptred and anointed sovereign. But the analogy both in its ancient and modern forms is an utterly misleading one. Races and nations are not integrated wholes governed by a specialized brain and central nervous system, but are amorphous agglomerations of individuals that are struggling to organize and govern themselves without possessing any special organs for doing so. If animals and plants were as poorly equipped for existence as are the collections of undifferentiated individuals who make up a nation, and who govern a nation, they would long ago have disappeared from the earth. Instead of being controlled by a highly specialized brain, nations are ruled by chance collections of men, who by accident, personal initiative and cleverness have climbed into positions of authority. We do not look upon a forest as being on a higher evolutionary level than its trees, and similarly there is no reason to regard a crowd of men as being superior to the individuals of which it is composed.

The truth is exactly the reverse of this. A study of crowd psychology shows clearly that the behaviour of men *en masse* is inferior to that of the individuals of which it is made up. Because they are freed from all sense of personal responsibility the men and women who form a crowd are dominated almost entirely by blind and instinctive fears, rapidly changing

moods and sudden impulses. They are unable to maintain any distant aim in view, but are swayed only by the passions of the moment. A crowd therefore has a strong resemblance to those lower forms of life which respond automatically to every passing stimulus and keep no more distant aim in view. What is true of a crowd is also to a great extent true of that larger collection of individuals forming a nation, for a nation is a loose and tenuous organization, the structure of which readily disintegrates into warring factions and parties, as was unhappily seen recently in France.

Even when we consider only the behaviour of the more highly cultured and successful nations of history, the truth holds good that the whole is of a lower order than the individuals of which it is composed. No nation reached a higher level of civilization than did Greece in the fifth century before Christ, but the achievements of that period were not the achievements of the nation, but of a comparatively few highly-gifted individuals. Ancient Greek culture was based on a system of slavery and on the subordination of the interests of the many to those of the few. Philosophy, art and literature flourished, but the nation as a whole was riven with war and revolution, state rising against state and city against city. So also was our own golden age of Elizabethan literature golden because of the few and not of the many, for the many could not even read. Individuals have sometimes reached higher levels of understanding, individuals have made progress, but the masses have never needed or demanded anything but the means to live. Those who belong to this large section of the community – and by masses is not meant the submerged classes but the great bulk of the nation – do not and cannot think beyond the requirements of the daily round. They are so occupied with the business of living, so immersed in the struggle to survive, that they have no time or capacity for independent thought. They merely repeat what others say, think what others think, and in the process of doing so bring down all ideas to their own level of culture. They condemn and applaud in unison and thus play the part of the chorus in

the drama of human life. Ouspensky has laid particular emphasis on the fact that it is the function of the individual to produce culture and the function of the masses to destroy it.

> It is the individual man who creates. All inventions, discoveries, improvements, all technical progress, the progress of science, art, architecture and engineering, all philosophical systems, all religious teachings, all these are results of individual men. The destruction of the results of this activity, their distortion, annihilation, obliteration from the face of the earth – this is the activity of the human masses.[1]

Ibsen uses this theme in his play, *An Enemy of the People*, employing as his mouthpiece the chief character, Dr Stockmann. He speaks of the few 'who stand so far in the van that the compact majority has not yet reached them – and there they fight for truths that are too lately born in the world's consciousness to have won over the majority'. Then Ibsen goes on to say that the only truths which are acceptable to the majority are truths 'so stricken in years that they are sinking into decrepitude'. Truths, he declares, live only some twenty years and when they become as old and as emaciated as this they are in a fair way to becoming lies. Yet Ibsen says:

> it is not till then that the majority takes them and recommends them to society as wholesome food . . . All these majority-truths are like last year's salt pork; they are like rancid, mouldy ham, producing all the moral scurvy that devastates society.

Again, it must be pointed out that when Ibsen refers to the masses he is not thinking of the so-called lower classes, but of 'the sort of common people' who 'crawl and swarm all around us – up to the very summits of society', mouthing decrepit truths and opposing all progress. The masses belong

1. Henrik Ibsen, *An Enemy of the People*. Translated by Mrs. E. Marx-Aveling.

to every level of society and we are often fated to be governe by them.

European civilization has been built on foundations o Christianity, but at no time have the activities of nations bee affected to any appreciable extent by the teachings of th Gospels. There have been individuals who were Christian and rulers who were influenced by Christianity, but there ha never been and never will be such a thing as a Christian nation That this is so is only too apparent from recent history. Th League of Nations was originally planned by a small group o idealists in the hope that it would be able to settle inter national disagreements in accordance with ethical pripciples Within a comparatively few years of its establishment Genev became an international market-place in which the shrew opportunists who controlled the foreign offices of Europ drove hard and shady bargains. Hardy's account of the Con gress of Vienna is equally descriptive of the meetings of th League at Geneva.

> The Congress of Vienna sits,
> And war becomes a war of wits,
> Where every Power perpends with all
> Its dues as large, its friends as small;
> Till Priests of Peace prepare once more
> To fight as they have fought before.

Our original representative to the League, Viscount Ceci was soon in difficulties. One does not send a clergyman t deal with horse copers, nor was it wise to have dispatched gentlemanly idealist to represent us at Geneva. He was re placed in time by more suitable national emissaries. Indi vidual idealists had created a machine for settling inter national disputes, but those who took control of it were more representative of national morality. The failure of th League was not primarily due to faults in its construction but to the fact that nations behave like low forms of life and recognize no other values than immediacy values.

Tolstoy was very puzzled by this fact and spent much time

wondering why men in masses are able to commit crimes of which they could never be guilty when acting as individuals, and he examines this difficult problem in the second part of the Epilogue to *War and Peace*. 'How is it,' he asks, 'that millions of men commit collective crimes ...? Is there any collective action which cannot find its justification in political unity, in patriotism, in the balance of power or in civilization?' He was convinced that the activities of nations were not determined by their leaders, by the Napoleons and the Hitlers of the world, or even by the men of ideas, such as Rousseau and Karl Marx, but by some mysterious force which acted on the whole of the nation.

> The movement of nations is caused not by power, not by intellectual activity, nor even by a combination of the two, as historians have supposed, but by the activity of all the people who participate in the events.

Tolstoy could not say what was this unknown power which determines the actions of large masses of men.

> Why war and revolution occur (he wrote) we do not know. We only know that to produce the one or the other action people combine in a certain formation.

The law of the crowd and of that greater crowd, the nation, is the law of the jungle, the subjugation of the weaker by the stronger. The lynching of Negroes by white mobs in America and the excesses of crowds stirred by revolutionary fever attest this. Only when the crowd breaks up into small groups are the individuals who composed it able to realize the true nature of the crimes which they have previously committed and, as Herbert Agar has pointed out, it is this interplay between small groups of men which exercises a moderating action on the behaviour of nations. Freedom of thought, freedom of the press and the free exchange of ideas are therefore necessary to national health, and one of the first and most necessary acts of a dictator is to destroy every form of group

and association in which free opinions can be expressed, fr the Chamber of Commerce to the Trade Unions. Secret pol must ensure that men are never able to meet together in lowship to discuss politics or national affairs. As Agar put it, in a totalitarian state

> *the crowd never breaks up.* It has no groups to return nothing to reintroduce sanity and order and discipl into its over-excited mind.[1]

Having destroyed all those smaller groups which are capa of exercising a moderating influence on mass movements, a having created for their own purposes an irresponsible a mindless crowd, the leaders can then proceed to apply to what stimulus they will. This programme has been carri out very thoroughly in all totalitarian countries.

It is not my intention to re-examine a question exhaustive investigated by Tolstoy or to attempt to find the reason w men in masses are capable of actions which would be repelle to them as individuals, because to do so would be to discuss problem of immense complexity. There is, however, o aspect of this question which is of considerable practical i portance and which it is necessary to deal with. At the prese moment there is much discussion in the press on the subje of the 'moral responsibility of the German people' for wh has happened in Europe. But what is meant by this term, 't moral responsibility of the German people'? Peoples a nations are not free agents, capable of choosing good or ev but, as Tolstoy clearly saw, are agglomerations of people th are controlled by forces and compulsions the nature of whi is unknown to us. At what bar are these low organisn known as nations to be tried and who is to act as their judge It is obvious that they cannot be judged by individuals or b small groups of individuals who are on a much higher lev than they are, and who are not subjected to the action of th forces which determine the movements of crowds. At wh

1. Herbert Agar, *A Time for Greatness*

tribunal, then, is an errant nation to be tried and by what code of law? Moreover, if the German nation is to be held morally responsible for the tragedies of the last five years, so also must the Allies be held responsible for the events in their respective countries which helped to make these tragedies possible. Ethiopia was a member of the League of Nations and had signed the Kellogg Pact, yet the Allied Nations dismissed the Emperor's call for help at Geneva as rhetoric and considered only their own immediate interests. The dignified words of the leader of a small and backward people aroused no response in the minds of the representatives of the stronger and more 'cultured' nations. In his final appeal he said:

> Do the people of the world not yet realize that by fighting on until the bitter end I am not only performing my sacred duty to my people, but standing guard in the last citadel of collective security? Are they too blind to see that I have my responsibilities to the whole of humanity to face? I must still hold on until my tardy allies appear. And if they never come, then I say prophetically and without bitterness, the West will perish.

Ethiopia waited in vain for the help which would have saved her from destruction. The wrong which she had suffered was soon conveniently forgotten and even condoned. In 1939 a British Prime Minister, accompanied by his Foreign Secretary, paid a visit to Rome and at a banquet in his honour included these words in replying to Mussolini's toast:

> Assuring your Excellency that I value highly your expressions of personal friendship, and with the hope that our two nations may together co-operate in the task of securing lasting peace in Europe, I raise my glass to His Majesty the King of Italy, *Emperor of Ethiopia*, and to the continued welfare and prosperity of the peoples over whom he rules.

Thus was the new Emperor of Ethiopia acclaimed over a glass of wine by a British Prime Minister!

It is even doubtful to what extent the leaders of Germany and Italy can be held responsible for what has recently happened in Europe, for the great majority of the men whom the world esteems great and who gain ascendancy over their fellows move only on the surface of events and have little relationship to the deep-seated causes of history. They are like the drift-wood in a stream which shows the course of the current. Tolstoy gave the following description of the leaders of the Napoleonic expedition against Russia, and what was true of them is true to a great extent of the leaders of modern Germany.

> They acted in accord with their personal characteristics and aims. They were moved by fear or vanity, rejoiced or were indignant, reasoned, imagining that they knew what they were doing and did it of their own free will, but they were all involuntary tools of history, carrying on a work concealed from them, but comprehensible to us.

Tolstoy wrote as a novelist and in *War and Peace* he described some of the forces which were responsible for the actions of the historical characters in his novel. But it is only in novels that we are in a privileged position and are able to follow the deep-seated causes of events, for in reading history the nature of the unseen forces is, as a rule, unknown to us. Taine, old-fashioned writer though he is now sometimes looked upon as being, said of the dramatic events of history:

> In the will of men there are two strata – one superficial of which men are conscious – and the other in profundity of which men are sub-conscious. It is the second one which determines the general gradient of the ground, and the main current of human action glides automatically along this incline.

The course of history is not therefore determined by such trifles as the shape of Cleopatra's nose or the stupidity of the

Bourbons, as some writers would have us believe, but by those larger forces, the existence of which Tolstoy suspected without being able to discover what they were. The events of the last ten years cannot therefore be attributed to the thwarted ambitions of a neurotic amateur artist or to the clever schemes of a one-time Italian journalist, for Nazism and Fascism are symptoms and not causes of the disease from which Europe is suffering. It is the causes that must be sought and treated if a recovery is to be effected, and only a few of these causes are known to us. By all means let us take every precaution to prevent the enemy countries from rearming, but let us abandon the foolish idea of putting whole nations on trial. By all means let us ensure that criminal lunatics and pathological men are kept under lock and key or otherwise disposed of, but having done this do not let us congratulate ourselves that we have dealt with the causes of the World War.

The whole of history can be looked upon as being the story of the conflict between the two opposing forces of culture and barbarism. Civilizations are based on cultures which lead to the establishment of an ordered pattern of life. They last for variable periods, are then destroyed, and are replaced at a later date by some new form of culture. Agar has reminded us that civilizations are subjected to the disintegrating action of two forms of barbarism, one active and violent and the other passive, less obvious and therefore more dangerous. It is the violent explosive type of barbarism which we are at present fighting in the form of Nazism and Japanese militarism, a barbarism which is prepared to destroy all order for the sake of seizing power, but it is the inner corrosive form of barbarism which is the more dangerous and which more often causes the lingering death of nations. It was this less dramatic form of barbarism which so nearly destroyed France and which was responsible for the weakness and folly of the other allied nations in the years before the outbreak of war. It was this corrosive type of barbarism which in a few more years might equally well have destroyed this country.

The capacity to exercise control over our material environ-

ment is only a means to an end, but more and more it has come to be regarded as being an end in itself. For at least a century the life of Western nations has been ruled by economics, all other considerations being regarded as of secondary importance. In Europe and America 'business was business', and if profits could be secured by supplying aggressor nations with arms, and Japan with the petrol and scrap-iron she so badly needed for her attack on China, then profits were taken up to the very eve of the war.[1] Used as a means to the establishment of a better order of living, economic progress might have brought with it manifold blessings to mankind, but used as an end it hastened the advent of chaos. Drucker[2] draws attention to the fact that prior to the last hundred and fifty years there has never existed a society in which national policy has been entirely dominated by economics. However primitive may be the form of society which the anthropologist studies he always finds that its economic life is subordinated to its cultural pattern. The exact reverse has been true of the Western nations during the last century and a half; policies have been determined by economics. What was true of the nation was also true of the individuals who made up the nation. Instead of the income of an individual citizen being fixed by his social and cultural status, it was his social and cultural status which was determined by his income. Governments were recruited from the ranks of good business men and honours were heaped on those who contributed most to the national wealth and had already profited greatly while doing so. During all the shabby years between the wars the only values considered were immediacy values and the only interests which seemed of importance were national interests. All other values and interests were dismissed as

1. In the eight months before the war we provided our enemies with twelve hundred tons of badly needed nickel, and, according to the *News Chronicle*, with over twenty thousand tons of rubber in the month that preceded the German invasion of Poland. Even after the declaration of war and after Italy had shown clearly where her sympathies lay, we continued to re-export spruce for the construction of Caproni aeroplanes

2. Peter Drucker, *The End of Economic Man and the Future of Industrial Man*

visionary, in other words, as being unbusinesslike and therefore impracticable. The efforts that have been required and will still be required to overcome the more active forms of barbarism have been and will be prodigious, but they are as nothing compared with the efforts which will be necessary if this less dramatic and more insidious form of barbarism is to be overcome.

To state that no real change can be effected by external planning alone is almost a platitude, for it is obvious that unless planning is accompanied by a new inner attitude nothing will be achieved. Yet external forms are not without some importance. I am told by psychologists attached to the forces that many of the men who were previously engaged in business have no desire to return at the end of the war to their previous occupations and to their former way of living. Having escaped from the stifling atmosphere of the counting-house and known the happiness of working with others for the good of the whole, they have acquired a violent distaste for a life of ruthless competition and snatching of personal profits. Although their seniors may conspire to grab an extra percentage of war-time contracts, their own actions are no longer determined by the factor of financial gain. The conditions found in the Services have provided them with the possibility of escaping from an inner tyranny and, this being so, external forms cannot be peremptorily dismissed as of no importance to the future of civilization.

But although war has aroused in many a spirit of service, the damage it is inflicting on Europe far outweighs the gain. Totalitarian forms of government have been followed by totalitarian methods of warfare, entailing mass mobilization for the labour front as well as for the services. Individuals are required to think and to behave according to a standard pattern, and all those smaller groups which exercised a restraining action on society have been disbanded and have disappeared. There is no other life than that imposed from above by the requirements of total warfare. The wholesale bombardment and destruction of cities have had a devastating effect

not only on buildings but on human character. Through th loss of all their possessions men and women who previous had homes, businesses, professions and circles of friends hav been reduced to the lowest level of destitution, and life fo them has become merely a fierce struggle for survival. An form of government becomes acceptable to them and an action demanded of them seems justifiable provided that gives them food and shelter. Total warfare therefore has th same effect on a population as have the barbarous forms government which it is the object of this total warfare t destroy. It removes from individuals all sense of person responsibility, reduces them to the lowest level of existenc and creates in them the general impression that the who world has gone totalitarian. In order to overcome one form of barbarism another form of barbarism has been let loos on the world; violence has been overcome by greater violence Wars solve nothing. They are periodic episodes in the life o those low forms of organisms known as nations, episodes t be endured as earthquakes, hurricanes and other terrestri phenomena have to be endured.

CHAPTER XIII

The Religion of Communism[1]

COMMUNISM is a better substitute for religion than is race-worship because, like humanism, it is all-embracing and therefore makes a world-wide appeal. It is invested with many of the qualities of a religion, possessing its sacred doctrines, its orthodoxies and heresies, its prophets, saints and martyrs, its ceremonials and its festivals. The Bible of present-day communism was written by Karl Marx, who, although he can never be regarded as having been a profound thinker, provided the revolutionary leaders of the last century with exactly what they needed, a philosophy and science of communism. Marx proved to their satisfaction that the nature of reality was such that their belief that the rule of capitalism was destined eventually to give way to the rule of the proletariat would inevitably be substantiated. A prophet who confirms the validity of our thinking and justifies our hopes is inevitably popular.

Although communist organizations attract into their ranks those who, possessing nothing themselves, see in any subversive activity possibilities of loot, the originators of communistic movements have in every age been thinkers and idealists. Distressed by the appalling conditions under which many of their fellow-creatures live and by the existence of so much want amid so much plenty, many people have arrived at the conclusion that the great majority of social evils are the result of the unfair distribution of wealth. They have felt therefore that the only possible cure must be a radical one and must involve an entire change in the economic system. Because it is obvious that there exists no possibility of bringing about a more equitable distribution of wealth by the rich

1. It should be emphasized that this chapter was written in 1943

voluntarily surrendering their excessive privileges, it is but natural that many of the reformers who have felt strongly on this subject have been prepared to exercise force, if this were necessary, to achieve their object. They have planned a communist state in which there shall be neither rich nor poor, exploiter nor exploited. Some of the finest characters in history have been amongst these planners, notably Plato, Sir Thomas More and Robert Owen.

In the *Republic* Plato gives voice to an intense dissatisfaction with the conditions under which the ordinary men and women of his time lived. He wrote:

> An ordinary city, however small, is in fact two cities, one the city of the poor, the other of the rich, at war with one another.[1]

Plato believed that these extremes in conditions of living could be redressed only by making drastic changes in every department of government, and some of the measures which he recommended bear a resemblance to those advocated by present-day communists. He advised that the life of every citizen should be controlled by the state from birth onwards, and that the unit of the family should be broken up. Children were to be removed from their parents and placed under the care of the state. Like modern communists, he looked upon education as being of the utmost importance and demanded that there should be equality of opportunity for all citizens of both sexes. He planned that they should be graded into different classes, not according to the accident of birth, but according to their individual ability and capacity. Where he differed from modern communists was that he realized that only a few individuals are by character and training fitted for the most difficult task of all, the task of ruling, and gave great thought to this subject. One of the qualifications for leadership which he felt to be essential was that rulers should undertake this work as a sacred obligation and not because they had any personal desire to exercise power. In Plato's communistic state

1. *Republic*. Book IV

government was not left in the hands of a proletariat possessing no qualifications for the task it has undertaken, but was entrusted to a carefully chosen and specially trained *élite*. Not only were prospective rulers to be carefully selected from amongst the more promising of the younger people, but they were to be prepared by special courses of study for their future work of government. Since in Plato's ideal republic all citizens would be provided for by the State, the rivalry between the rich and poor would automatically disappear and all would work in harmony together. Policy took precedence of economics.

The *Utopia* of Sir Thomas More had many features in common with the *Republic* of Plato. In it the fruits of labour and of enterprise were shared by everybody and the use of money and the display of wealth were strictly forbidden. Sir Thomas More's protest against the exploitation of labour might well have been uttered by Marx and Engels.

> The rich (he wrote) desire every means by which they may in the first place secure to themselves what they have amassed by wrong, and then take to their own use and profit, at the lowest possible price, the work and labour of the poor. And as soon as the rich decide on adopting these devices in the name of the public then they become law.

Science was of little account in the days of Plato, More and the earlier communist idealists, and they appealed to compassion and to reason in advocating their reforms. Nineteenth-century communists seek the confirmation of science, and this confirmation has been supplied to them by Marx in the form of what is known as 'dialectical materialism.' Marx, a student of Hegel, adopted from this philosopher his form of dialectic as a means of reaching truth. He accepted Hegel's dialectic, but said that it 'must be turned right side up', when it would show that all development, whether of thought or of events, was brought about through the conflict of two opposing elements or tendencies. The process of development involved

a series of ups and downs, the success of one tendency automatically bringing about a greater resistance on the part of the other until, in time, this overcame the other. Then the whole sequence of events was repeated. Marx gave as an example of this the struggle between individualism and collectivism. As the nineteenth century grew older it became increasingly individualistic in character, but the growth of individualism brought into action the forces of collectivism, which became a formidable rival to it at the very moment at which it appeared to be triumphing. He applied the same principle to the rivalry between capital and labour and made a remarkably accurate prognostication of the future history of their struggle. Marx prided himself on being a practical philosopher and criticized the theoretical methods employed by the classical economists of his day, protesting that it was impossible to discover the laws which govern society by considering imaginary individuals living in an imaginary world. To discover economic laws it was necessary to study history itself, as he had done. He had put this recommendation into practice by examining the effect which the introduction of machinery into industry had had on the feudal structure of English society.

As the result of his study of history Marx showed that politics and economics were inextricably interwoven, but that at the moment at which he was writing economics dominated politics. This he believed to be a temporary condition and he foretold that at a later date politics would become so powerful that it would dominate economics. Capitalism for Marx represented a passing phase intervening between the feudalism of the past and the socialism of the future. In Marx's opinion the clue to the understanding of the history of capitalism was the capitalists' incessant search for greater and greater profits.

> Within the capitalist system all methods for raising the social productiveness of labour are brought about at the expense of the individual labourer – they mutilate the labourer into a fragment of a man, degrade him to the

level of an appendage of a machine, destroy every remnant of charm in his work, turn it into hated toil . . .[1]

The concentration of the means of production in a few hands inevitably created a large reserve army of unemployed. As the capitalist system developed the contradictions existing in it would become more and more apparent, and when the purchasing power of the masses was sufficiently reduced, a glut of unbought goods would be left in the markets. Marx foretold that when the situation grew bad enough the proletariat would form themselves into a party which would be joined by those who had been squeezed out of the privileged classes by the action of capitalism. After its ranks had been swelled by these recruits, the proletariat party would become so powerful that its final victory was inevitable. By behaving as they did, therefore, the bourgeoisie were acting as their own gravediggers.

The collapse of capitalism has not been brought about as rapidly as Marx expected it to be, but many of the prophecies in the Manifesto written nearly a century ago have already been fulfilled. It is by no means certain that capitalism will entirely disappear, but if it does so it is unlikely that what Marx expected to happen afterwards will be substantiated by history. It has not at any rate happened in Russia. Marx foretold that after the abolition of all private property and a subsequent and temporary period of transition, a classless, international and fully democratic form of society would be evolved. In such a society all forms of state coercion would be unnecessary and police, law courts, prisons and standing armies would automatically disappear. Even the most enthusiastic advocates of communism will have to admit that this Golden Age of personal liberty and of universal plenty is still a long way off in that country which for the past quarter of a century claims to have put into practice the theories of Marx. Russia can scarcely be regarded as a country which is remarkable for the personal liberty of its citizens!

1. Communist Manifesto

The philosophy of communism was evolved at the height of the triumph of materialistic science, and it was inevitable that Marx should have been influenced by this. He admitted frankly that he looked upon everything from a materialistic standpoint.

> With me (he wrote) the ideal is nothing else than the material world reflected by the human mind and translated into terms of thought.

Engels and his followers regarded consciousness as a derivative of matter, a matter which was never at rest but in a state of continual flux.

> In the eyes of dialectic philosophy (wrote Engels) nothing is established for all time, nothing is absolute or sacred.

This being so, feudalism, capitalism, the dictatorship of the proletariat and the establishment of a classless and stateless society were all to be regarded as being passing phases in the flux of material events.

The social implications of Marxism are of greater interest to us than its philosophy and its economics, and they alone will be discussed. Marx and Engels both looked upon the family as being an economic unit which had been carefully preserved in the interests of its male head. They maintained that because women and children were economically dependent on the man, they had always been exploited by him. For this reason it was essential that the unit of the family should be destroyed in the new form of society that was to be created. In order to emancipate women from economic control and to allow them to take part in what Marx and Engels considered to be 'productive' work, they must be relieved of the care of their children soon after these were born. The liberation of women and children could best be brought about by instituting easy divorce, state crèches, kindergarten schools, and by making the state entirely responsible for the upbringing of all children. It is scarcely necessary to

point out that Marx and Engels were entirely mistaken concerning the true nature of the family unit. It is a biological and not an economic unit, a fact which no biologist or sociologist will dispute. Even Russia has now to a great extent recognized that such is the case. There is also a deep and fundamental psychological relationship between the parents and the children, a relationship which makes it utterly impossible for any state institution to act *in loco parentis*. The importance of this relationship has recently been demonstrated. The war brought about in England what Marx and Engels proposed to effect by legislation, namely the forcible break-up of families ; children were evacuated into homes in the country and fathers and mothers were often compelled to work in different localities. So much nerve strain was produced by this enforced disruption of the family unit that there were many breakdowns, not only amongst children, but also amongst their parents. But it is probable that Marx was moved by his circumstances rather than by his reason to advocate the destruction of such a basic unit of society as the family. He was writing *Das Kapital* under great difficulties while living in poverty in a crowded London lodging-house, and his work was continually being interrupted by the clamour of his own children. We do not know how fond he was of them, but it would not be surprising if his mind dwelt somewhat longingly on the idea of public crèches, and of fathers relieved of all parental responsibilities by a wise and kindly state. The Arcadia which we visualize for ourselves is usually one in which all our personal problems disappear, and the ideal communist state was Marx's private Arcadia.

Marx was a practical man as well as being a visionary, and he realized that the exploiters of the proletariat would never willingly give up their privilege of exploiting. All social organizations and systems tend to persist long after justification for their continued existence has ceased, and the capitalist system would not prove to be an exception to this rule. Revolutionary methods would therefore have to be employed if the world was to get rid of capitalism. Marx and Engels

were convinced of this, and in the second section of the famous manifesto they indicated how the necessary revolutio could best be brought about.

First the proletariat must form themselves into a self-con scious class, then overthrow the bourgeoisie, and seize polit cal power. All measures short of this were useless, and becaus this was the case the two leaders discountenanced every a tempt to better the conditions under which the labourin classes worked. Palliative measures would postpone the da of the inevitable revolution and were referred to as forms 'petty bourgeois socialism'. Far from being beneficial, soci reforms were actually pernicious, since they made the mass more content with their lot and thus provided bourgeo governments with a useful weapon for fighting true com munism. The Manifesto closes like a royal proclamation, wit a final overpowering blast of trumpets. The Communists

> openly declare that their end can be attained only by th forcible overthrow of all exciting social conditions. L the ruling classes tremble at a Communist revolutio The proletarians have nothing to lose but their chain They have a world to win. Working men of all countrie unite!

'The Manifesto of the Communist Party' is a powerfu piece of political propaganda, and, like all propaganda, mak its appeal to the emotions rather than to the intellect. B eliminating all qualifying phrases, all doubtful issues, all ex tenuating circumstances, its authors have produced a wor which overwhelms the reader. It exerts upon him a forc which is similar to that exerted by a Victorian melodrama o the audience, and it is only later that the means by which th effect has been produced become apparent. Like successfu playwrights, Marx and Engels have produced their result b a process of simplification and intensification. Everythin which does not contribute to its dramatic value has bee eliminated from the manifesto; the bourgeoisie are unmistak ably bourgeois and the proletariat entirely proletarian, an

never for one moment is the mind left in doubt concerning the respective rôles which these clearly defined sections of humanity play in the drama of human misery, the rôles of the utterly unscrupulous villain and of the long-suffering hero. For Engels and Marx the bourgeoisie and the proletariat are not merely useful abstractions from humanity, but are the very bones of mankind. Engels was right when he compared 'Marx's proposition' with the Darwinian theory, for both of them are over-simplifications of what are really elaborate complexes of phenomena. Natural selection and the struggle between the bourgeoisie and the proletariat are to the Darwinians and the Marxists respectively the master keys by which all doors may be unlocked.

Faith is of the very essence of religion and the devotees of communism have complete confidence in the tenets of their creed. Whilst the head is often satisfied with an approximation to the truth, the heart demands an unqualified 'yes' or 'no,' or what the scientists call an 'all-or-nothing' response. Both race-worship and communism provoke this 'all-or-nothing' response; salvation can be achieved only by sacrificing everything to the race; human misery can be eliminated only by 'the forcible overthrow of all existing social conditions'. Here are two wholehearted beliefs in which the worshippers can find a happy release from their sense of frustration. Dissatisfied with the philosophy of meaninglessness, tired of the all-too-familiar personality with which they are fated to live, and aware that orthodox religion cannot help them, innumerable men and women have discovered in communism a means of escaping from themselves. By embracing it they have immediately become crusaders in a great cause, champions of the underdog, heralds of a new and happier era. Prior to the outbreak of the present war H. G. Wells said of the young men and women of the day that they were suffering from a fund of unexpended seriousness. Thanks to communism, many of these overloaded young men and women were enabled to get rid of their surcharge of energy. *Das Kapital* appeared on the bookshelves of Oxford and Cambridge under-

graduates, and dialectical materialism became a fashionable philosophy at many of our universities. To be an avowed communist marked a man off from his conventional bourgeois fellow-undergraduates, and at the same time gave a clear indication that he was completely free of parental control. In the years preceding the present war communism made great progress amongst the young intelligentsia and it still has many adherents in this class of society.

Words and deeds seldom tally and communism in theory and communism in practice have very little in common. In theory communists express a dislike of the centralized authoritarian state, and Marx even referred to the state as a 'parasite on society'. He admitted that during the earlier period of the change from a bourgeois to a communist form of society, a strong central government would be necessary. This would take the form of an initial dictatorship of the proletariat, but it would only be a preliminary to the establishment of the new order. Soon the dictatorship would disappear and be replaced by a classless, self-governing form of society. Although Marx had criticized the economists of his day for evolving nebulous theories instead of studying the pages of history books, he does not appear to have always adopted this means of verifying the accuracy of his own ideas. Has there ever existed in the whole of human history a dictatorship which retired after it had accomplished its task? When power has been seized by violence and maintained by violence, is violence likely to be laid on one side? Although Marx had not our advantage of studying communism in practice, he could have found in history many indications that dictators never efface themselves.

In Russia communism has been firmly established for a quarter of a century, the private ownership of the means of production has disappeared, and money is no longer the means by which one individual dominates another, but while the lust for money has disappeared, the lust for power remains and is likely to remain indefinitely. Political prestige brings with it great privileges and communists struggle for strategic positions in the political hierarchy controlling the Soviet state

as eagerly as men in other countries struggle for wealth. It is as unlikely that those who have succeeded in establishing themselves in favourable positions and who enjoy unique privileges will voluntarily vacate them as that plutocrats in capitalist countries will voluntarily abandon their wealth and all the advantages which this brings with it. Whatever communism may be in theory and however sincerely it may subscribe to the ideal of a classless society, in practice it is unable to attain this chimerical ideal. The capacities of men are too varied and too unequal to allow of the existence of a classless society or even of a society in which there are equal opportunities for all. To drag all pupils into the same classroom and to impose on them the same syllabus would be to make a travesty of education and to attempt in the same way to construct a society in which all were of equal rank would be a travesty of government. Russian communists have rightly abandoned the absurd idea of creating a classless society. At the present moment class distinctions are being accentuated in Russia: the gap between the officer and the private in the Russian army is rapidly widening, more gold braid is appearing on uniforms, a special ceremonial uniform has recently been designed for the diplomatic corps and a School of Cadets on the lines of St Cyr and Sandhurst has recently been opened. The several million bureaucrats who govern Russia now form a class which is as distinct from the masses as wealthy people in England and America are distinct from the very poor, and their position in society gives them numerous privileges. They are the new Aristocracy of a country which has always been governed by Tsars and nobles. Many of the more important of these officials are provided with a two- or three-roomed apartment in the big modern hotel near the Kremlin, and this in Russia's overcrowded capital is exceptionally good accommodation. They are given special ration-books which entitle them to eat in better restaurants than other people, and a chauffeur-driven limousine is placed at their disposal, so long as they remain in office. They have the additional advantages of being able to maintain a country house and of being allowed

to send their children to special schools which prepare ther for higher education at one of the universities. The days whe Trotsky went about preaching that Soviet officials should re main unshaven and should parade their dirty linen in publi in order to emphasize the fact that they belonged to the pro letariat are in the far distant past.

The changes which have occurred in Russia during the las ten years could not have been avoided, for the communism visualized by Marx in his lodging-house can only be estab lished and conserved by idealists who are living under ver special conditions and who are willing to make immens sacrifices for the sake of their aim. Such a form of communism existed for a time amongst the earliest leaders of the Christia Church.

> And all that believed were together, and had all thing in common: and sold their possessions and goods an parted them to all men, according as every man had need.[1]

Since those days true communism has been practised i monasteries and by the members of various religious an idealist brotherhoods. For the sake of a greater aim the me and women of these communities have been able to lay asid worldly ambition, material comforts and personal preferences and to live peaceably together. When communism is put int practice as part of a political programme, it can only be main tained through the exercise of force. The interests of the indi vidual have to be subordinated to those of the state, and any thing which does not subserve those interests, or which com petes with them, has to be rigidly suppressed. In other words a rigorous censorship must ensure that religion, art, literatur and science all support the views of the reigning bureaucracy and a strong police force must keep a watchful eye on th private activities of the citizen.

Since it is the aim of a religion to promote the spiritua development of the individual it is obvious that in a com munist state, in which the interests of the individual are sub

1. Acts iv, 32–35.

ordinated to those of the state, all religious beliefs must be discouraged. Nothing must be allowed to compete with the individual's loyalty and devotion to the state. The attitude of communists to religion is in keeping with their belief that consciousness is a derivative of matter, a belief which is summed up by Engels as follows:

> Religion is nothing but the fantastic reflection in men's minds of those external forces which control their early life.

In saying this Marx and Engels anticipated Freud, but they could not, like him, merely brush religion lightly on one side as an idle superstition of no particular importance. For them religion was also one of the obstacles to revolution, for it prevented the proletariat from becoming discontented with their lot, and hence the famous dictum of Marx and Engels, 'Religion is the opium of the people.'

It is not proposed to analyse the results achieved by communism in Russia, if for no other reason than that it is impossible to do so. For twenty years the political movement in that country has been known elsewhere as 'the Russian experiment,' but it is an experiment the results of which have been withheld from the inspection of the rest of the world. Not only are those consequences of communism which visitors from outside Russia are allowed to investigate carefully selected, but the subjects of the experiment have been prevented from comparing their own lot with that of the people of other countries. The censorship is too rigid to allow of any free exchange of views or of any comparison of the relative merits of democratic and soviet forms of government. The apologists for the violence and hardship which the imposition of communism on Russia has entailed, and still entails, frequently point out that the conditions in that country at the end of World War I were so appalling and that the nature of Russian society was such that severe measures were necessary for the maintenance of order. They assure us that other European countries could contrive to change from a capitalist

to a communist regime with far less difficulty, and at a small cost of suffering for the individual citizen. And it is true th the Russians are Asiatics rather than Europeans and that th are more accustomed than are the Teutonic and Latin races brutal forms of government. In this connexion the followi passage from Amiel's *Journal* is of great interest:

> What terrible rulers the Russians would be if ever th should spread the might of their rule over the countri of the south! They would bring in a polar despotis tyranny such as the world has never known, silent darkness, rigid as ice, decked with an outer amiabili and glittering with the cold brilliancy of snow, a slave without compensation or relief.

It is impossible for any outsider to know the truth abo that great country, or to arrive at any unprejudiced estima of the results which have been achieved by the Russian for of communism apart from the creation of a great and hero army. All that can be said with any certainty is that the regim there is in process of changing and that Russia now bea little resemblance to the theoretical Communist State of Mar and Engels. Were Lenin to revisit the scene of his triump he would be astounded by the changes which have occurre there since his death. Stalin's outlook is now frankly nation alist, and the Red Army performs prodigies of valour, not fo the sake of any ideology, but for the old Holy Russia, th beloved motherland. Internationalism has given place t nationalism.

All revolutionaries must retain an unshakable confidenc in the particular regime which they strive to impose on thei fellows if they are to be successful in doing so. It is as vita therefore to non-Russian communists that they should main tain an ardent belief in the success of the 'Russian experiment as it is vital for an orthodox Christian to have implicit faith i the doctrines of his church. We cannot doubt and be suc cessful revolutionaries. When I was a boy it was customar in my Scottish home on sabbaths to sing a hymn in whic

was repeated the refrain, 'There is a happy land far, far away'. Lined up in front of the family harmonium, with a warmth in our hearts which increased with the swelling of the music, we children sang of the happy land 'far, far away'. We convinced each other of its glittering perfection, of its pavements of gold and its gates of pearl, by the very ardour of our singing, and if ever our faith flagged we sang the louder. Since I have grown up I have become doubtful as to the real nature of that happy land which I have never seen, but about which I once sang so lustily. I am also doubtful about the real nature of Soviet Russia.

Nor can I guess what will be the eventual outcome of this determined effort to base a government on a clear-cut philosophy rather than on what the Soviet leaders believe to be deceptive slogans, such as 'Liberty, Fraternity, Equality', and that poor tired word 'Democracy'. All that I know is that for the Russian leaders communism has become a religion, and that their feeling for it is so intense that they have developed the mentality of inquisitors. Everything must be sacrificed for what they believe to be a sacred mission; nothing must be allowed to stand in its way. A few years before his death Lenin proclaimed that the socialization of the means of production had been achieved but that the socialization of human beings would take many years. The leaders of Russia are playing for time, and until they feel that their sacred mission has been fulfilled no criticism will be tolerated either from within or from without. It remains to be seen what will emerge when the despots of the Kremlin deem that the millions over which they rule have been satisfactorily conditioned. In the meantime communism serves as a substitute for religion to an increasing number of young men and women.

CHAPTER XIV

New Horizons

A CENTURY and a half have elapsed since Comte claimed pre-eminence for science, counselled the Church to abandon its vain search for an incomprehensible God and to devote itself to the service of mankind and stated that the true function of philosophy was to co-ordinate and systematize the discoveries of science. It has been one of our tasks to pass in review the results of this new adjustment of the respective rôles to be played by science, religion and philosophy in human affairs. The recommendations of the positivist philosophers were to a great extent put into practice, and it must be admitted that the results which have been achieved have not been entirely satisfactory. Man cannot live by science alone, and instinctively he knows this, for he has disavowed one form of religion only to create for himself another. But although many of Comte's prophecies have not been fulfilled, he undoubtedly showed great acumen in foretelling the future development of that department of knowledge in which he was most interested, the department of science. He stated that during the course of its evolution science inevitably passes through three different stages. The first stage is one of crude animism and fetishism. Primitive men believed that all the physical events of the universe in which they lived were due to the activities of spirits and that the course of these events could be turned in their favour by sacrifices, prayers, magical incantations and offerings to the gods. This primitive phase of science had long been passed and gods and spirits had given place to impersonal forces, activities and principles, exemplified by the force of gravity, chemical activity and by the vital principle which at the time at which Comte wrote was believed by many biologists to explain the phenomenon of life.

When all of these new impersonal agencies of science are considered together they are referred to under the general heading of 'nature'. In this stage of the evolution of science the events of the physical world which it studies are deemed to be outside of human control, except in so far as men can utilize their knowledge of her laws to make nature serve their private purposes. This was the stage which science had reached in the time of Comte, but he believed that it would eventually be passed and that a third stage would be attained, a stage in which it would no longer be possible to explain phenomena in terms of forces, activities and principles. When science arrived at this final stage of its development scientists would have to be content merely to describe a mathematical pattern of events without being able to state what was actually happening. Comte arranged the various sciences in a certain order, according to the distance which each had travelled along this line of progress. He stated that mathematics had already reached the final stage and would be followed in turn by astronomy, physics, chemistry, biology and sociology. These sciences formed therefore a hierarchy in which each was historically older, logically simpler and more widely applicable than that which followed it. Comte foretold therefore that physics would be the first of the sciences to reach the final positive stage that had previously been attained by mathematics. To understand precisely what he meant by this and to realize how fully his prophecy has been justified, it will be necessary to turn for a moment to recent developments in physics.

As we have seen, physicists retained the system of mechanics invented by Newton up till the end of the nineteenth century. They looked upon the world as being made up of particles like minute billiard balls moving hither and thither under the pulls and pushes imparted to them by other particles, the whole medley of motion having been set going by some initial cause. When in the nineteenth century atoms broke down unexpectedly and resolved themselves into electrons and protons the Newtonian system of physics still remained ser-

viceable, and, with a little stretching, it could be made to accommodate the electro-magnetic theories of Clerk Maxwell and Faraday. Even after Einstein had introduced his theory of relativity the old mechanical explanation of the physical world could, with the help of various artifices, such as Schrodinger's equation, still be used. But it was becoming obvious that the Newtonian system of physics could not be preserved indefinitely, and with the discovery of quanta its defects became so glaring that it had to be hastily abandoned. It was no longer serviceable to scientists. First, Einstein had shown that the forces which account for movement would be estimated differently by two observers who were moving at different speeds and that these different estimates would have an equal claim to be considered right. Since this was the case the forces to which the movements of particles were attributed in the Newtonian explanation of the world could not be looked upon as being constant or as having any objective existence. They were merely mental constructs made by scientists in their efforts to understand the working of nature, constructs which varied under different conditions. They were indeed of the same nature as the hypothetical ether that had been postulated as a means of explaining the undulatory theory of light. In other words, they were convenient fictions and not objective realities.

Observations on the behaviour of quanta showed even more clearly that a mechanical explanation of the world was no longer possible. When we leave the man-sized world behind us and proceed in either direction towards the infinitely great or the infinitely small, or the infinitely rapid, the laws of nature would appear to undergo a change. What was found to be true of the medium-sized world of man no longer appears to be true of the immense world of the stars or of the minute world of the electrons. In neither of these worlds is it possible to represent the fundamental activities of nature as occurring in time and space, or to look upon them as being mechanical in the ordinary sense of that word.

But, as Jeans has pointed out, even if the discovery of re-

lativity and of quanta has made it necessary to discard the old machine-model of the universe, we are not called upon to sacrifice anything of real importance to us. At first sight it may seem helpful to represent matter as being made up of hard spherical atoms that behave like billiard balls colliding with each other, rebounding from each other, imparting to each other motion and arresting each other's progress, but actually this picture of what was supposed to be happening gave us very little help. All that it had really done had been to place us within a vicious circle in which we first described billiard balls in terms of atoms and then described atoms in terms of billiard balls, a description which brought us no nearer to a true understanding of the ultimate nature of either billiard balls or atoms.

Physics has now reached Comte's third or positive stage of its development, in which it is no longer possible to visualize the structure of the atom, but possible only to describe a certain pattern of events in a space-time continuum. When a modern physicist is asked to give an account of the structure of matter or of the nature of radio-active substances he produces a sheaf of mathematical formulæ. If we are able to understand these we find that they do not really give us an account of nature, but an account only of the impressions which nature produces on our minds. The calculations show a certain relationship between the various shadows which reality casts on the recording apparatus of the brain. Should we be dissatisfied with this and demand some picture of what is actually happening, a picture can be given, but it will have to be remembered that this picture represents only one aspect of physical events. To represent another aspect of them, another, and perhaps an entirely different, picture will have to be drawn. For example, two pictures may be drawn of radiation, a particle-picture and a wave-picture; one of these is useful when we are considering one aspect of the phenomenon of radiation and the other when we are considering another aspect of it. They are like the different maps to which a student of geography turns when he wishes to study different qualities

of a country or continent: its physical characteristics, its political boundaries, its varying rainfall and the distribution of its population.

It is important to note that when we study these different pictures we must be prepared to find that they give us information which sometimes seems to be contradictory. It is, of course, obvious that the particle-picture represents reality as being atomic in nature and the second represents it as being made up of waves of energy, but the two pictures also return different answers to the question whether everything in nature is strictly determined. To understand this it must be recalled that Planck found that radiant energy is not discharged continuously, like water from a hose, but that it is shot off in separate parcels of quanta, like bullets from a machine-gun. When the behaviour of quanta thrown off by radioactive substances is studied it is found that it is possible to calculate how many will be liberated in a given period of time, but that we have no means of foretelling which particular quanta will be liberated at any given moment. Nor is there any method by which we can force an electron to jump before it chooses to do so and thus fill the quota demanded by the statistical law. In other words, we can only calculate the behaviour of a large number of electrons and not that of a single electron. When we study the two different pictures of radiation used by physicists, the particle-picture and the wave-picture, we find that the first represents the jumps made by individual electrons as being haphazard and undetermined, and that the second represents every event in the universe as being strictly determined. Jeans calls attention to another difference between the two pictures.

> ... the ingredients of the particle-picture are particles existing and moving in physical space, while the ingredients of the wave-picture are mental constructs existing and moving in conceptual space; the ingredients of the particle-picture are material, those of the wave-picture mental.[1]

1. Sir James Jeans, *Physics and Philosophy*

The discoveries of modern physics were welcomed by theologians because they believed that they provided confirmatory evidence of the spiritual nature of the universe. The hard, uncompromising matter of the Victorian scientists had broken down and had given place to 'waves of probability undulating into nothingness', 'collections of electrical charges', and 'systems of events in a space-time continuum'. However difficult it might be to understand these new descriptions of matter, it was clear that it had become so tenuous that it need no longer occasion any difficulty to those who believed in the spiritual nature of the universe. Everything had now been etherealized by the scientists, and it was felt that twentieth-century science was becoming so friendly to religion that all the differences of opinion which had caused estrangement in the past were now in process of disappearing. Actually the conclusions reached by the physicists neither refuted nor confirmed the equally plausible conclusions of religious-minded people, and confusion may even result if attempts are made to assess the accuracy of knowledge drawn from one variety of human experience by comparing it with knowledge drawn from another variety of it. Many difficulties have indeed arisen from this in the past, the representatives of religion denying the validity of scientific theories and the exponents of science discounting the views of the exponents of religion.

It is reported that the late Lord Haldane was so interested in the philosophical and religious implications of Einstein's theory of relativity that he invited the great mathematician to meet a distinguished company of churchmen and philosophers at his house. The then Archbishop of Canterbury had unfortunately not been primed as to the reason for the dinner party, and on being introduced to Einstein he at once asked him whether he thought that his discoveries bore any relation to religion. Einstein replied, without hesitation: 'None. Relativity is a purely scientific theory which has nothing to do with religion.' In one short sentence he thus disposed of the whole reason for their meeting. But Einstein was perhaps unnecessarily abrupt in his reply. Even if modern

physics neither confirms nor refutes religious beliefs, its discoveries have had such a profound effect on our views of the physical world that they must inevitably influence our thoughts concerning the nature of reality, whether we look upon reality from the standpoint of religion or from that of science. The new discoveries show clearly that the account of the world formerly given by science was a very incomplete account of it and that many of the arguments against religion which were based on it can no longer be considered valid. They have certainly had a marked effect on the thought of the physicists themselves and have convinced them of the truth of Plato's view that we do not study reality itself, but only the shadows which reality casts on our minds. In spite of their distaste for philosophy, they have been forced to study it, and more particularly that branch of it which is known as epistemology. As pure mathematicians were compelled to become logicians, so are physicists now being forced to enter that debatable territory which Eddington has called the territory of scientific epistemology. They must study not only the nature of the physical world but also the nature of the knowledge of this world which is derived from their particular methods of investigating it.

A parable, imperfect though it be, may help us to understand our situation when studying the physical world. This whole world, both apparent and real, may be compared to a deep-flowing stream and we to spectators watching its surface and unable to see into its depths. Jeans has likened scientists to experts investigating the eddies of the stream and the bubbles which from time to time rise from its depths to ruffle its surface.

> These are the transfers of energy and radiation of our life, which affect our senses and so activate our minds; below these lie deep waters which we can only know by inference.

The particle-picture and the wave-picture used by the physicists are not therefore pictures of the deep waters but of the bubbles which have risen to the surface from the dark and

the unseen. We are capable of examining only these bubbles and cannot say how closely the picture we have made of them tallies with what has happened below. In the opinion of the physicists it is probable that the wave-picture approximates more clearly to these hidden events than the particle-picture. Whilst we have no guarantee that this is the case, there are reasons for supposing that the relationship established between the various bubbles on the surface reveals something of the events we cannot see. In any case, we can only study these surface phenomena, for the noumena are beyond our ken.

The modern physicists are more modest than were their predecessors of the nineteenth century, for they realize how incomplete is the account which they give, or are ever likely to give, of the material universe they are studying. This account resembles a plan made by an architect at a very early stage of its construction; here and there a few faint lines have been marked in and the rest of the paper has been left blank. Many parts of the drawing will never be filled up, at any rate not by an architect. It is a very different plan to that which would have been made by their predecessors, for the three-dimensional world of Newtonian physics, with its separate dimension of time, was so scribbled over that there was no room in it for anything new. But here is a plan full of intriguing blanks. When we examine the cyclic scheme of modern physics we find that it postulates the existence of a background which is outside the scope of scientific investigation. Should we wish to put into this vacant background a 'spiritual reality', or some other conception of a non-scientific nature, we are at liberty to do so. As Eddington has put it :

> Here, says science, I have left a domain in which I shall not interfere. I grant that you have some kind of avenue to it through the self-knowledge of consciousness, so that it is not necessarily a domain of pure agnosticism.

In a previous chapter I have attempted to show that man has been endowed with a special faculty by means of which

he is sometimes able to reach knowledge which is beyond the range of the senses, and it is this faculty which he must use if he is to attempt to fill in some of the blank spaces left by the scientists. The idealist philosopher will fill in the lacuna in one way and the religious man in another, and I do not think that any modern physicist would utter a protest if the latter used for this purpose the sublime words with which the Gospel of St John opens:

> In the beginning was the Word, and the Word was with God, and the Word was God.
> The same was in the beginning with God.
> All things were made by him; and without him was not anything made that was made.

The scientists who have penetrated farthest into the region of the unknown feel more deeply than any others the truth of the picture Newton drew when he likened himself to a small child picking up strange shells on the shores of an illimitable sea. The great scientists are acutely aware of the limitations of their powers and of the immensity and of the astonishing nature of the universe they are attempting to explore. How vast is the sea and how feeble are the wings of our thought, so feeble that we are able to make only the shortest flights over the surface of the great unknown. Each flight in search of more knowledge can only be a trial flight, every guess at truth a tentative guess, for the depths of the seas are unknown to us. We can never speak in terms of certainty, but only in terms of probability. Jeans illustrates the scientist's acceptance of the probable as the basis of his knowledge by citing the example of what happens in the spectrum analysis of the stars. A physicist measures the various wave lengths of the spectral lines which he finds in the light reaching him from Sirius, and he discovers that they are identical with those in the light given off by hydrogen at a temperature of ten thousand degrees centigrade. He concludes from this that Sirius contains hydrogen at this temperature and is satisfied that his inference is correct. As it is extremely unlikely that we shall ever be able to visit

Sirius we shall never be absolutely certain of the truth of the scientist's statement, but the odds against the agreement being a coincidence are so great that we disregard them. We must be content to base our conclusions on the 'probable' rather than on the 'certain'. This does not impose on us any hardship, for, as J. W. N. Sullivan has said, probability is really our guide in life, and if all our assumptions were to be expressed verbally, 'we should find the phrase "it is reasonable to suppose" occurred more frequently than any other.'

Twentieth-century scientists realize far more fully than did their predecessors how tentative are the conclusions at which they arrive. In the Victorian age it was believed that the main features of the universe were known to scientists and that the details alone remained to be discovered. The broad outlines of the world studied by the astronomers and the geologists had been settled and the biologists had made a preliminary survey of the march of the evolution of life from its beginning in the amœba to its culmination in man. It would be for future generations of scientists to fill in the gaps in this knowledge. The universe of the Victorians moved in accordance with certain iron laws, many of which had already been discovered, and, since this was the case, it was confidently anticipated that the future would hold for scientists few surprises. It is obvious that an utterly different spirit permeates the scientific world of to-day. The modern discoveries in physics have shown that the universe depicted by the older physicists was far less objective than they believed it to be and that its iron laws were the products of their intellects rather than of the external world they studied. A universe, the features of which have been constructed out of such plastic material as the human mind, may therefore well hold for us many future surprises. Some of these surprises have already revealed themselves to us. The discovery of quanta has necessitated a complete change in our conception of the universe, and if this has happened once it may well happen again. We have found new laws, but we have also found new mysteries, and as that great scientist Clerk Maxwell once said:

> It is a universal condition of the enjoyable that the mind must believe in the existence of a law, and yet have a mystery to move about in.[1]

We have enough mystery now to get lost in. The materialists of a former age built for themselves a model of the world in which their minds had no independent existence, and now that we have examined more carefully the bricks out of which they built it, we find that they were made chiefly out of mind. The only difficulty we are now experiencing is in deciding to what extent our minds are responsible for the construction of the world in which we move. According to one view, the part which it plays is a dominant one, and it is our minds which clothe the featureless point-events studied by the physicists with their attributes of substantiality, duration, colour, sound, smell and texture. In the opinion of others these events themselves possess those attributes. But in either case the mind must be credited with an independent existence unless, as some of the older systems of philosophy taught, all matter is alive and endowed with the psychic properties of intelligence and consciousness.

No rapprochement between science and religion was possible so long as science was entirely materialistic in its outlook, and so long as the Church insisted on the literal interpretation of the symbolic language of the Old Testament. But fortunately the uncompromising attitude on both sides has now been abandoned. Scientists no longer attempt to explain the universe exclusively in terms of mechanism, nor claim that they are giving an account of reality, and churchmen have a more liberal outlook and do not take it upon themselves to deny the discoveries of science. Science and religion have therefore moved nearer to each other. There are, of course, scientists who from time to time step outside the sphere of science and make categorical pronouncements on the subject of religion, just as there are churchmen who continue to interpret religion so narrowly that no understanding with them is possible. But

1. Clerk Maxwell. Quoted by J.W.N.Sullivan in *Aspects of Science*

science and religion are no longer habitually in conflict. This being so, the time has now come, in the opinion of many people, for the development of what C. D. Broad calls a critical philosophy, meaning by this, 'the analysis and defintion of our fundamental concepts and the clear statement and resolute criticism of our fundamental beliefs'.[1] And it is true that what men need more than anything else is an integrative philosophy which will take account of all varieties of human experience and synthesize them into a harmonious whole.

Not only individual men but also nations suffer from the intellectual confusion which results from the absence of any common *Weltanschauung*. The disintegration of the old traditional Christian schema and the failure to reach any agreement on fundamental principles has brought Western culture to the brink of disaster. Whereas the first world war was waged between countries which were at any rate nominally Christian, and which paid lip service to Christian ideals, even although they did not follow them, the second world war is being waged between powers possessing entirely incompatible ideologies. The confusion which has resulted from the absence of any common principles will outlive the war and jeopardize the ensuing peace, for it is only too obvious that unless men can reach a certain measure of agreement as to the value and meaning of human existence, no peace can ever be more than a breathing space between wars. Until there is some mutual understanding on fundamental principles contradictory ideologies will continue to arise and to divide men into hostile groups.

The difficulties in the way of attaining an integrative philosophy of life are immense, but there are indications that the urgent need of such a philosophy is now becoming apparent to many who previously believed it to be unnecessary. One favourable change is the liaison which has been brought about between science and philosophy by the new discoveries of the physicists. Even although some scientists are content to con-

1. C. D. Broad, *Scientific Thought*

tinue working within the narrow traditional boundaries of science, there are many who are less parochial in their outlook. C. H. Waddington[1] insists that because science possesses a method of inquiry that can be applied to the whole range of human experience, it is in a position to study any problem that is of importance to humanity. But there are scientists of much wider vision, such as Eddington and Wood Jones, who call attention to the fact that however widely the scientific method be used, it will still be unable to answer questions of paramount importance. To obtain an answer to these we must refuse to be bound by the limitations of science and must turn in other directions. There are also philosophers of the calibre of Bergson and Whitehead who have already shown some of the ways in which the discoveries of modern science can be harmonized and correlated with those of religion. Many churchmen have also realized that the Church's failure to bring its ancient formulations of the eternal truths of religion into line with modern knowledge has been in part responsible for the weakening of the Church's influence on human affairs. Although the various church conferences in Birmingham, Stockholm, Lausanne and Jersualem would appear to have accomplished very little, the complacency of those who attended them was sufficiently shaken for them to have reached the conclusion that 'large-scale changes in the interpretation and the application of Christianity are inevitable'. Finally, there is the favourable sign that more and more people are beginning to realize that the fundamental truths taught by all the great world faiths are identical, and that even although the evolution of a single religion is impossible, and perhaps undesirable, there is no reason why all who hold religious beliefs should not work together in concord.

One thing is certain, namely, that a synthesis of knowledge will never be achieved from below, but must proceed from above. By this is meant that no group of scientists, philosophers and churchmen by meeting together, exchanging their ideas, and discussing their differences, will ever succeed

1. C. H. Waddington, *The Scientific Attitude*

in producing a harmonious system of knowledge. This can be reached only by proceeding from above, that is to say, by recognizing first the existence of certain higher principles and higher levels of thought and descending gradually from these to a consideration of the manifestations of these higher principles in the material world. From the discursive and analytical knowledge of science it is impossible to reach these higher principles, but working in the opposite direction the contradictions on the lower levels of thought disappear. Knowledge of these fundamental principles is given in all the great traditional teachings of the world, often in the form of symbols, rituals and myths, the meaning of which is generally obscure to those who have no key to their understanding. Guénon attributes the present chaos in the Western world to its having lost all connexion with 'traditional knowledge'.[1] By these words he implies such knowledge, often handed down orally, as is contained in the Vedas, the Tao and in esoteric forms of Christianity and Mohammedanism. He is of the opinion that nothing but a renewed contact with these traditional and higher systems of thought will avert the disaster towards which the Western world is now drifting.

1. René Guénon, *The Crisis of the Modern World*

CHAPTER XV

Conclusions

If a conclusion be defined as a final result it may be said that no work which deals with philosophy ever reaches a final result. It traverses in every direction the field on which it intends to build, clearing the ground of all obstructions – and many of these obstructions have been left there by other philosophers – and then gets down to the work of laying the foundations of a structure which will never be completed. This book has stopped short of the stage of digging the foundations, for it was never my intention to propound a philosophy, but only to trace the effect of scientific theories on the thought of the last hundred years and to attempt to discover some of the reasons for the prevalence of unbelief. It will be for the reader to erect on the ground which has been cleared for him the *religio vitæ* which he finds best suited to his requirements. The philosophy at which a man eventually arrives is always a personal philosophy, a system of beliefs which he slowly builds up for himself, and not a building which he takes over from some previous owner complete in every detail. He may borrow freely from others but his philosophy bears the unmistakable imprint of his own personality.

If one fact is emphasized more than another in the foregoing chapters it is that because men's actions are determined more by feeling than by thinking it is impossible for them to live only by science. Science can satisfy many of our needs, but not those of the spirit. It will be remembered that when Descartes was floundering in the quicksands of his scepticism, struggling to reach a foothold sufficiently firm to provide him with a starting point for his philosophy, he made use of the famous dictum, *Cogito, ergo sum*. Of this fact he could feel certain, for

no Watson had yet appeared to cast doubts on the existence of thought and consciousness. But we human beings do more than think; we move, we perceive and we feel, and the aid of not one but of all our faculties must be enlisted if we are to make sense of ourselves and of the world in which we are placed. As Raven has said, it would be as absurd for a scientist to announce 'Truth is my business and nothing which cannot be weighed and measured is of any importance to me', as it would be for a Christian to proclaim, 'God is my concern and I propose to ignore anything which has not been ratified by the Bible or by St Thomas Aquinas'. And yet there are many who would appear to favour this blinkered manner of seeking knowledge and this deliberately restricted method of living. They resemble those medical men whose vision has become so narrowed that they can see only a single means of curing ailments, a certain form of diet, a particular medicine, some electrical method of treatment, or an ingenious operation. Health entails a balancing of all our functions as well as adjustments between ourselves and the outside world. If this balance and adjustment is upset it can rarely be restored by the use of any single remedy. Understanding may be defined as a similar harmony in the world of ideas, a harmony which can be attained only by the balanced action of all our faculties.

When Max Planck was invited to describe the rôle of science in human life he replied that science was 'a constructed work of art, expressing a certain side of man's nature'.[1] In giving this definition Planck acknowledged that there are many sides to man's nature which cannot find expression in science. We have not only a scientist within us, but also a poet, an artist and even traces of a potential saint. Each of these characters must learn to speak their parts to the best of their ability if the drama of life is to be properly played. Eric Gill once said that an artist is not a special kind of man, but that every man is a special kind of artist, and what is true of the artist in us is also true of the poet and the philosopher and the worshipper of the Divine. It is for each

1. J. W. N. Sullivan

of us to discover how the growth of the less developed sides of our nature can be encouraged so that we may live life richly and well. The world is too full of specialists, of scientists who think of everything in terms of their own science, of Christians who are completely out of touch with modern ideas and are content to remain marooned in the thought of the Middle Ages, and of artists and poets who can give expression to nothing of greater importance than the contents of their own 'sub-conscious'. Each of them surveys the universe from his own particular vantage point, taking note only of those features in it which are of interest to him as a specialist and turning a blind eye to everything else. Coleridge – and he is not alone in this – was of the opinion

> that deep thinking and deep feeling were inseparable, and that the Euclidean understanding failed, and must fail, to comprehend in isolation the sum of reality,

but few of these short-sighted specialists seem to realize this. There is, however, a rather pathetic entry in Charles Darwin's diary which indicates that late in life he discovered how dearly he had paid for his over-devotion to science and the consequent neglect of his other faculties:

> My mind seems to have become a kind of machine for grinding general laws out of large collections of facts, but why this should have caused the atrophy of that part of the brain alone, on which the higher tastes depend, I cannot conceive ... The loss of these tastes is a loss of happiness, and may possibly be injurious to the intellect, and more probably to the moral character, by enfeebling the emotional part of our nature.[1]

1. There is a somewhat similar entry in J. S. Mill's Autobiography. 'For I now saw, or thought I saw, what I had always before received with incredulity --- that the habit of analysis has a tendency to wear away the feelings: as indeed it has, when no other mental habit is cultivated, and the analysing spirit remains without its natural complements and correctives.'

In this connexion it is interesting to me to recall my own state of mind when working for my Natural Science Tripos at Cambridge many years ago. Although at the time I realized that there were many sides to my nature, I believed that the intellectual faculty which I used in the dissecting room and in the physical and chemical laboratories could alone bring me to truth. It was only much later that I discovered that all varieties of human experience have cognitive value and that the emotional insight of the poet, the sensitiveness of the artist to beauty, and the intuitive response of the religious man to the Divine, far from obscuring truth, may reveal facets of it which are inaccessible to the intellect alone.

Science, as we have seen, portrays for us a world from which all values have been arbitrarily excluded, a world which because it has been built up of abstractions is devoid of any meaning for us. As Whitehead has said, science 'bifurcates the universe', that is to say, it isolates things from their surroundings and separates those entities which it is capable of studying from those which, because they do not lend themselves to scientific methods of research, must be ignored. It cuts up 'the seamless coat of the universe' into a number of pieces and by this act of mutilation obliterates its design. A world without values is a world without meaning; it is something which exists but cannot be explained, a world that it is profitless to study.

In our hearts we know that however little we may be capable of understanding them, the universe must have some meaning and purpose. It is impossible for us to believe that we are seeing design where there is no design, that we are discovering goodness and evil, beauty and ugliness, truth and untruth, in a world which is ethically and æsthetically neutral. Such a view is acceptable only to empiricist philosophers who hold that all knowledge is derived from sense experience and that there are no other possible approaches to truth. If this be the case, then values have no objective existence, and a moral action is merely an action of which the majority of our fellows approve. In Hume's words: 'Actions

are not approved because they are moral; they are mor
because they are approved.' We all recognize this type
conventional morality based on a public opinion which vari
in different periods and in different localities. Having bee
brought up in a good Scottish home, I can still remember th
pangs of remorse from which I suffered when for the first tim
I bathed on a Sabbath day. The voice of the 'Super-Ego
within me protested that I had broken a sacred commanc
ment. But whilst much of our morality is based on nothin
more substantial than the desire for the good opinion of ou
neighbours, it is impossible to believe that all our values ar
of this nature. If this were so the masses against whom D
Stockmann declaimed so fiercely in Ibsen's *An Enemy of th
People* are invariably right, and the pioneers of thought whor
he selected for praise are invariably wrong. Judged by th
standard of ethics defined by Hume, Christ was an utterl
immoral man and the priests, scribes and pharisees were full
justified in preserving the values of which they were th
custodians by condemning Him to death. But if I have trie
to show one thing more than another in the foregoing chapter
it is that sense experience is not the only means of knowledge
and that there is a faculty of direct perception which whe
developed may lead to the apprehension of truth. It must b
admitted that this intuitive faculty but rarely functions an
that in many of us it is so weak as to be virtually non-existent
but fortunately those great religious geniuses in whom it wa
fully developed have left behind them messages to which w
can refer for guidance. The sacred literature of the world i
full of such inspired messages for those who have the desir
and the ability to find and understand them.

Each of us must picture the universe in his own way an
in accordance with his level of intelligence and understanding
It may be variously interpreted as being the work of a per
sonal God, of a Cosmic Mind, of a creative force, or as th
Perfect Way of the Taoists. And what of life? There are som
who have looked upon the whole of the cosmos as a living
entity and others who are of the opinion that life has been

relegated to a small and insignificant part of an immense uninhabited universe. But however different may be the terms in which we describe our surroundings, it is difficult to look upon it without recognizing the 'purposive and designed nature of the whole'. During the last century the older view that the universe formed an intelligent harmoniously integrated whole was lost, but modern thought is now returning to it. Whitehead, for example, in insisting that the cosmos is a unity, 'a pattern-process of events' which can only be interpreted by including in our description of it those terms for which scientists have such a strong distaste, meaning and purpose. For him, as for the older philosophers, the universe is a living, intelligent, purposive and creative organism, a view of it which frees us from the inexplicable paradox that out of a dead and mindless world have been evolved life and intelligence. We are no longer forced to believe the unbelievable that we, the poor foundlings of a small planet situated in an outlying part of the universe, possess what has been denied to everything else in the cosmos, namely, life, intelligence, and consciousness. Instead of picturing man as a conscious and intelligent intruder in a dead, imbecile universe we can look upon ourselves as being children of the same nature as the mother who bore us, partakers of a common life, sharers in a universal mind.

Although philosophy now moves again in the direction of idealism, our thoughts are not so fluid that they immediately follow its new trends. Too often they remain entrapped in the various theories which we have accepted at an earlier period of our lives and with which we have remained satisfied without ever having thoroughly examined them to discern whether they were true or not. Custom is our enemy and makes dullards of us all, changing the eager questioning of the child into the heavy indifference of the adult who has only to witness a miracle a dozen times to cease to marvel at it. It is only amongst those who retain the child-like qualities of the world's great thinkers that wonder survives and that thought retains its buoyancy and freedom. 'Except

ye become as little children' is as necessary a condition to the attainment of understanding as to entry into the Kingdom of God. 'Who am I?' asked Carlyle. 'What is this Me? A Voice, a Motion, an Appearance; some embodied, visualized Idea in the Eternal Mind ... The answer lies around, written in all colours, and motions, uttered in all tones of jubilee and wail, in thousand-figured and thousand-voiced harmonious Nature; but where is the cunning eye and ear to whom that God-written Apocalypse will yield articulate meaning?'[1]

Who am I, and what is the nature of this astounding universe in which I find myself and for which some part of me is for ever seeking an explanation? Science can give me no satisfying answer, for science 'is only a makeshift, a means to an end which is never attained.' The science which I learnt in my youth assured me that all the wonders I saw, the thoughts which I thought, were the products of a turmoil of energy-matter working to no purpose and conforming to no plan. But the answer it gave me was nonsense, or, as Jeremy Bentham would have called it, 'nonsense on stilts'. It was the intellect's vain attempt to explain what was beyond its comprehension, for the intellect working alone is barren, and before it can be fruitful it must be fertilized by the other faculties in man. In this book I have spoken much of purpose and meaning, and in doing so I have doubtless affronted the more satisfied type of scientist and have exposed myself to the attacks of many critics. I shall be told that to speak of purpose is to speak subjectively, as a man speaks when he seeks to see in external phenomena a justification for his own inner desires. But neither I nor anyone else can speak otherwise than subjectively. What a man writes down on paper, whether he be scientist, philosopher or poet, can only be the report of his total human experience, the outcome of his intellectual, emotional and intuitive life. All recorded observations, if they are to be significant and of interest, must necessarily be subjective; they are the notes made by an individual pilgrim in his journey through life. And how small is the

1. *Sartor Resartus*

sum of our actual knowledge! With regard to all the more important things, to the questions which concern us more nearly, it amounts to little beyond a consciousness of our own ignorance.

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THE PERSONALITY OF MAN

G. N. M. TYRRELL

A165

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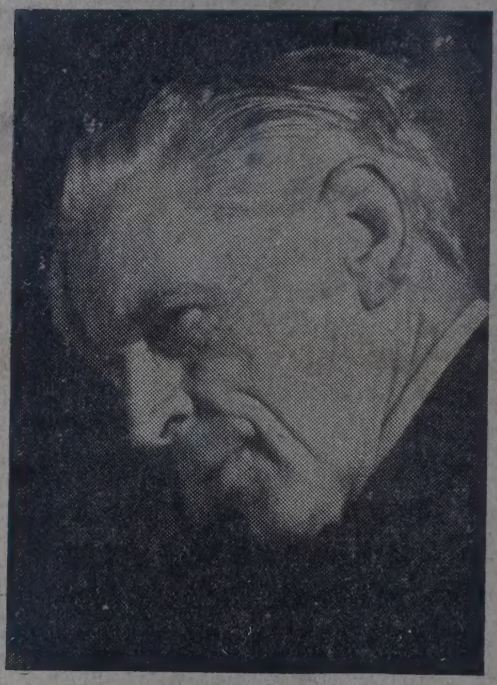

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